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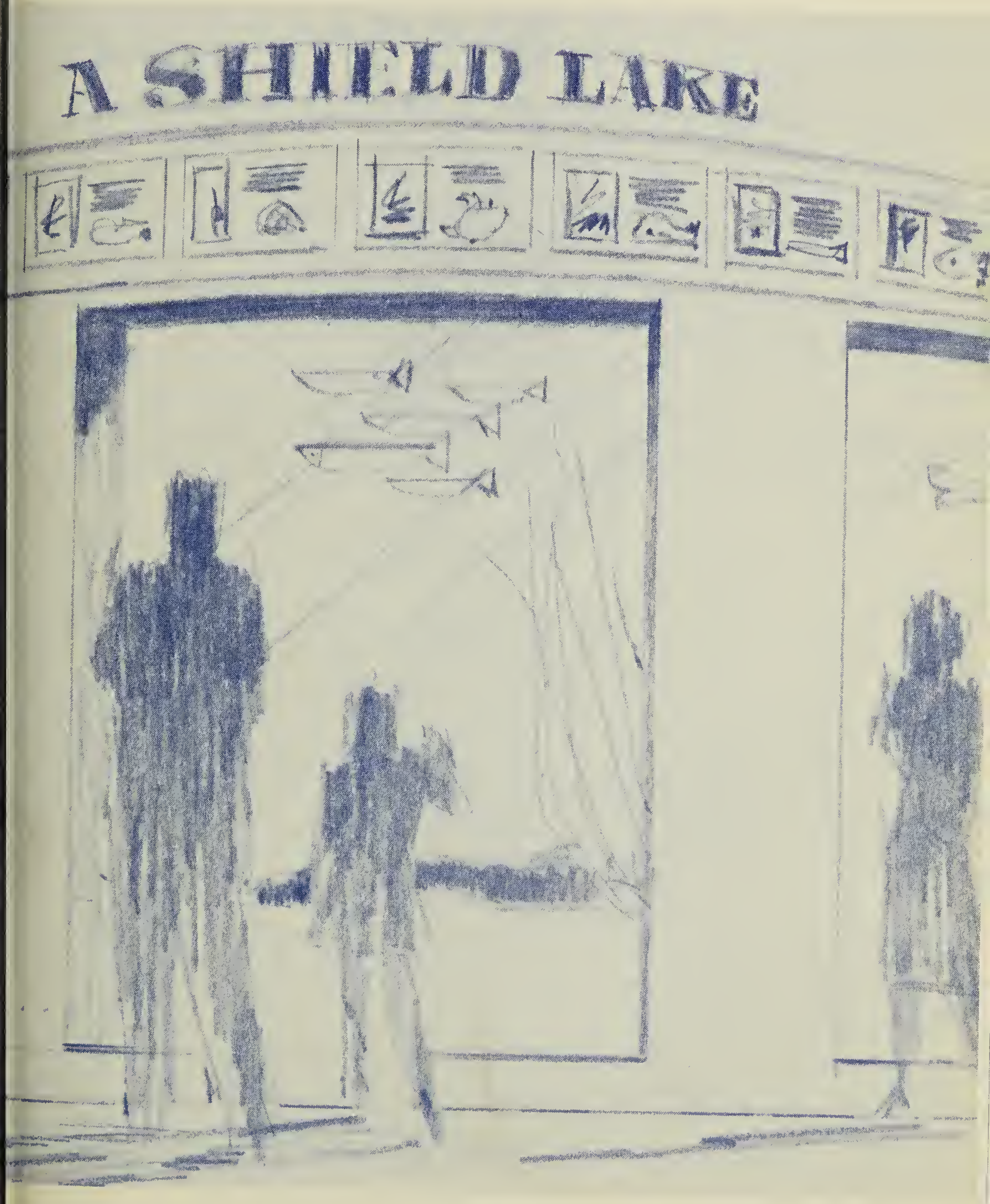

Blue Jay

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A PRAIRIE AQUARIUM

ANDY LAMB, No. 35 — 330 N. Nanaimo St., Vancouver, B.C. V5L 3J6, and
JOHN E. GAWRON.

A countless number of rivers, streams, lakes and ponds throughout prairie Canada provide habitats for a myriad of fascinating freshwater organisms. Some of these creatures, such as the ferocious northern pike and the famous goldeye are familiar to many prairie people. However, numerous aquatic animals spend their lives in relative obscurity, probably known only to a handful of biologists.

In addition to freshwater habitats, some 500 miles of Hudson Bay coastline, adds a marine element to an already diverse prairie fauna. Therefore, a vast spectrum of life, from microscopic daphnia to highly sophisticated marine mammals, abound in multitudes throughout the waters of central Canada. This entire aquatic realm and its interrelationships beckon for man's understanding and compassion. A prairie aquarium could provide the vehicle for transmitting this knowledge, something central Canada richly deserves.

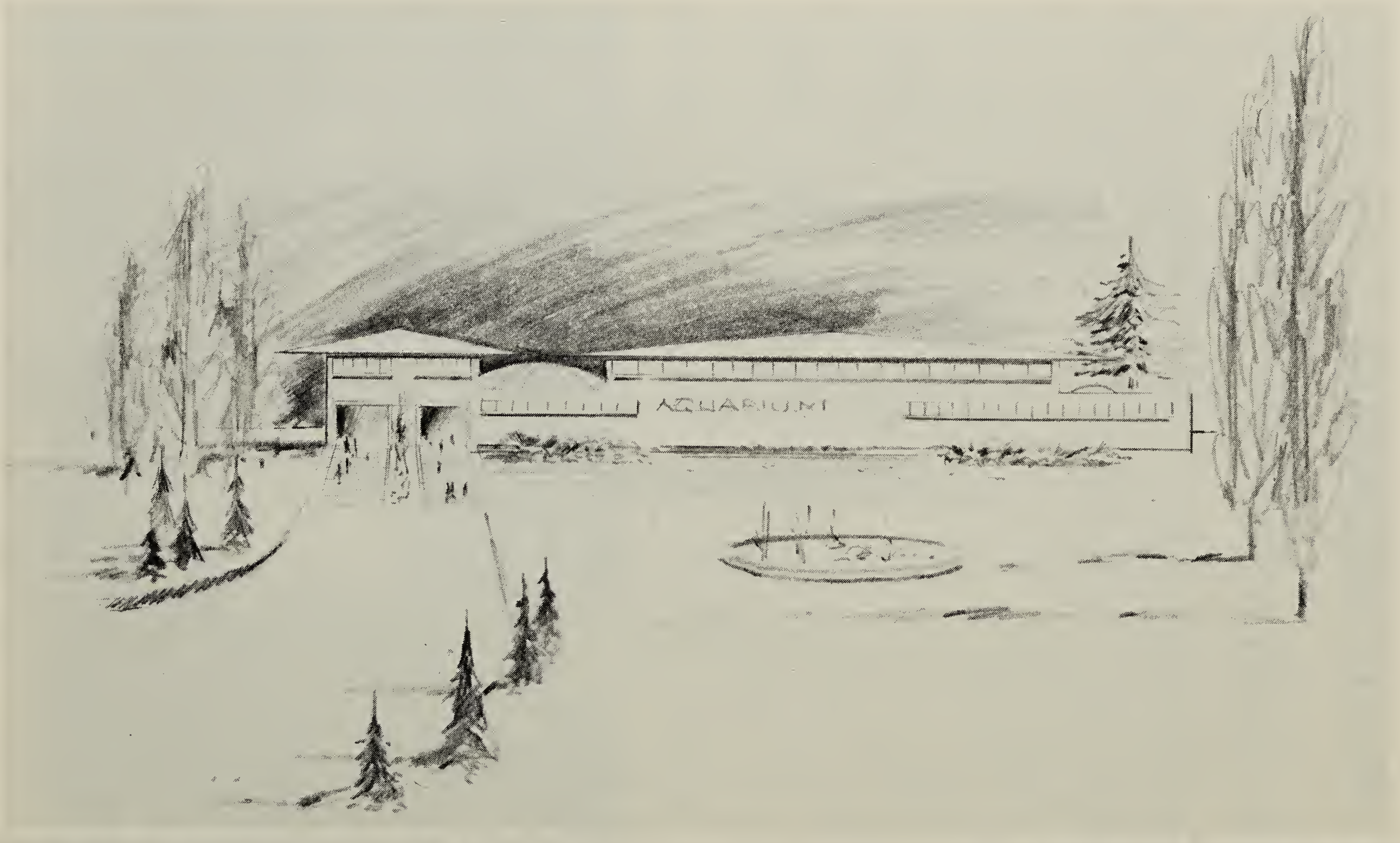
Canada has long recognized an essential commitment to comprehend the complexities of the watery world. In various centres across our Dominion, a number of public aquaria exist or are under construction. Victoria, Vancouver, Toronto, Montreal, Quebec City, Charlottetown and Halifax are now fortunately endowed with facilities that interpret aquatic life to their citizens. Only a superficial glance at this list reveals an obvious absence with regard to the prairie provinces.

The fact that central Canada does not as yet have a public aquatic centre can be viewed as an advantage when considering the implementation of such a socio-educational establishment. Careful planning of what the institution should be, combined with a critical review of other facilities and their achievements, can result in an aquarium with immense impact. The enviable position of being able to learn from successes and failures of others is one that should be capitalized on.

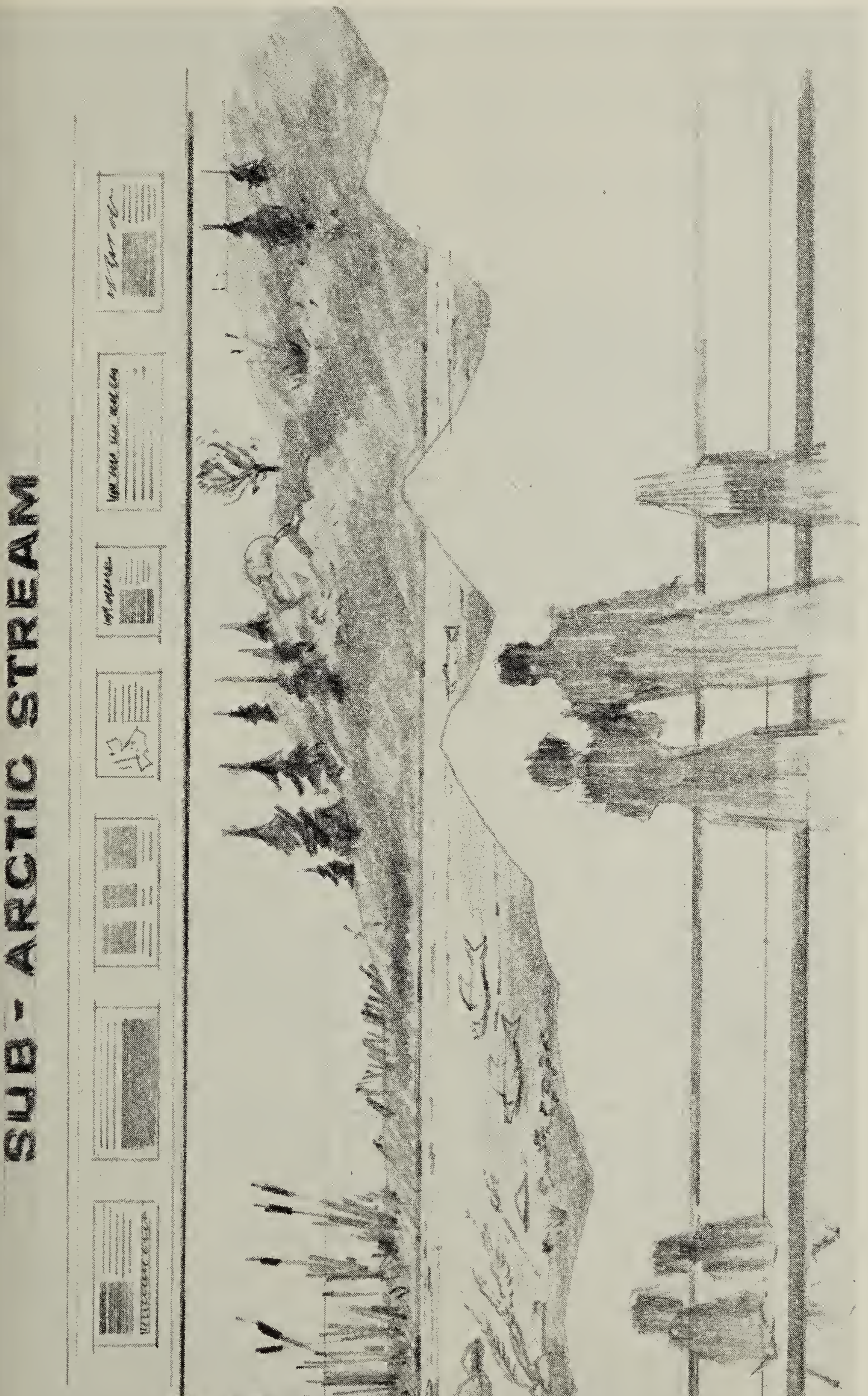
Present climatic factors have exerted momentous effects upon the prairie landscape which have resulted in the creation of four biotic regions. The semi arid climate of the Great Plains provides the flat rolling habitat for a grassland flora. A rich geologic legacy provides the precambrian bedrock upon which dwell the spruce-pine forests and associated faunas of the shield region. Smallest of the four zones, the narrow coastal band known as the sub-arctic furnishes a harsh, permafrost realm where sparse ground-hugging vegetation ekes out life in a short growing season. Finally, the majestic Rocky Mountain barrier with its diversity of climates supplies an abundance of alpine habitats.

Within these zones, four relatively different aquatic faunas flourish. Although not mutually exclusive, most of the freshwater organisms which dwell in one region differ significantly from those of the other three areas. Through meaningful interpretation, a prairie aquarium could provide a public focal point for participatory interest in native aquatic life.

A regional aquarium concept can instill an abiding respect and pride among prairie citizens for their aquatic heritage. The substantial coastline along Hudson Bay will undoubtedly become increasingly important with the passage of time. As a last frontier, we all recognize that the north will play a vital role in our country's future. Interestingly, the marine creatures of the north have received little attention as yet from Canadian aquaria. A tremendous opportunity exists for a prairie aquarium to present this poorly understood fauna to all



Possible front view of proposed Prairie Aquarium



Potential aquarium display for a sub-arctic stream.

Canadians through fascinating and enlightened interpretation programs.

Fundamental to an aquarium concept, could be the all-encompassing use of the facility as a dynamic educational implement. A public aquatic centre would provide each and every one of its visitors with a thoroughly orchestrated message about the prairie aquatic heritage in a manner both educational and recreational. Having been exposed to this dual thrust, visitors will be both entertained and stimulated by his or her illustrated tour of central Canada's aquatic world. Ideally their experience will eventually culminate in a knowledgeable and enduring concern for the fragile ecology of the watery environment. This concern for the welfare of all aquatic organisms on our rapidly changing planet could be further encouraged through a public participatory aquarium.

Molded to the philosophy of a public aquarium should be the premise that as an individual, each visitor visualizes and assimilates information at a personalized rate. This concept, therefore, should be accounted for when the functional design of such an institution is being considered. However, each individual should have the opportunity to exercise a choice based upon individual needs and desires, when participating in a programmed tour through the facility. The overall recreational-educational theme of the aquarium provides a framework for specialized programs. The creation of specific agendas, catering to distinct interest groups, could be an important duty of the institution and its staff. Facilities and expertise could enable particular audiences such as school children, conservationists, anglers, commercial fishermen, aqua-culturists, photographers, and divers, to absorb and investigate material pertinent to their own fields of endeavour. As a community resource, the aquarium could encourage public participation in its activities. Through participatory memberships, interested parties could assist in providing leadership and direction for the aquarium so that it could take its rightful place in prairie culture.

Undoubtedly, the most important special-interest group to be served by an aquarium would be the future citizens of our country — the children. It is with them that the future of these provinces' aquatic domains will rest. Therefore, an aquarium in central Canada could provide an ambassadorship for the lakes, streams, ponds and seas of the region, thereby helping to ensure their future safety.

During the school year and in conjunction with regional school boards, aquarium staff could work closely with teachers to enable the facility to serve to its fullest capacity. Carefully prepared material could be made available to the schools prior to visits, enabling maximum value to be extracted from the tours.

In these days of ever mounting parental concern about the education of their children, a responsive aquarium could provide a unique opportunity for actual participation by parents in their offsping's enlightenment. Under the supervision of aquarium staff, willing adult volunteers could be thoroughly trained to take an active role as docents, personnel who provide guidance for school groups. Not only will both child and adult simultaneously benefit from this relationship, but the possibility of closing the generation gap is increased. Community involvement through the educational process is a commitment upon which such an aquarium could be founded.

To facilitate and encourage maximum use of the aquarium's educational potential, evening adult courses could be arranged, primarily during winter months. Highly qualified guest speakers, drawn from university, research institutes and museums throughout Canada's midwest, could be solicited to provide presentations in their fields of expertise. Through dialogue between aquarium staff and the public, the curricula of these lecture series would largely be determined by public interest. It is anticipated that countless

Volunteer presenting educational material to school children through visual aids.

Craig Ferry

Students use aquarium educational laboratory facilities.

Vancouver Public Aquariums

First hand experience with a salamander. Gar Lunney hours of productive, enjoyable leisure time would reward citizens enrolling in such programs.

An up-to-date informed public is one that could make the best use of an aquarium and its programs. Institutions such as aquaria are involved in a continual flow of new projects and constantly changing displays. Regular bulletins about the aquarium and its activities could be distributed. In addition, a liaison between the press and the aquarium could also contribute to the public awareness. The related role of a public clearinghouse of aquatic information could be an important additional service to the people of the Prairies.

A natural, built-in dichotomy exists that would, to some degree, separate peak participation in the aquarium by tourists and local visitors. Active prairie folk make the most of their summer months by enjoying the great outdoors. It is at this time that the tourist influx reaches its maximum. In response to this different and special clientele, every effort could be focused on them in an attempt to make their visit a memorable and enjoyable one.

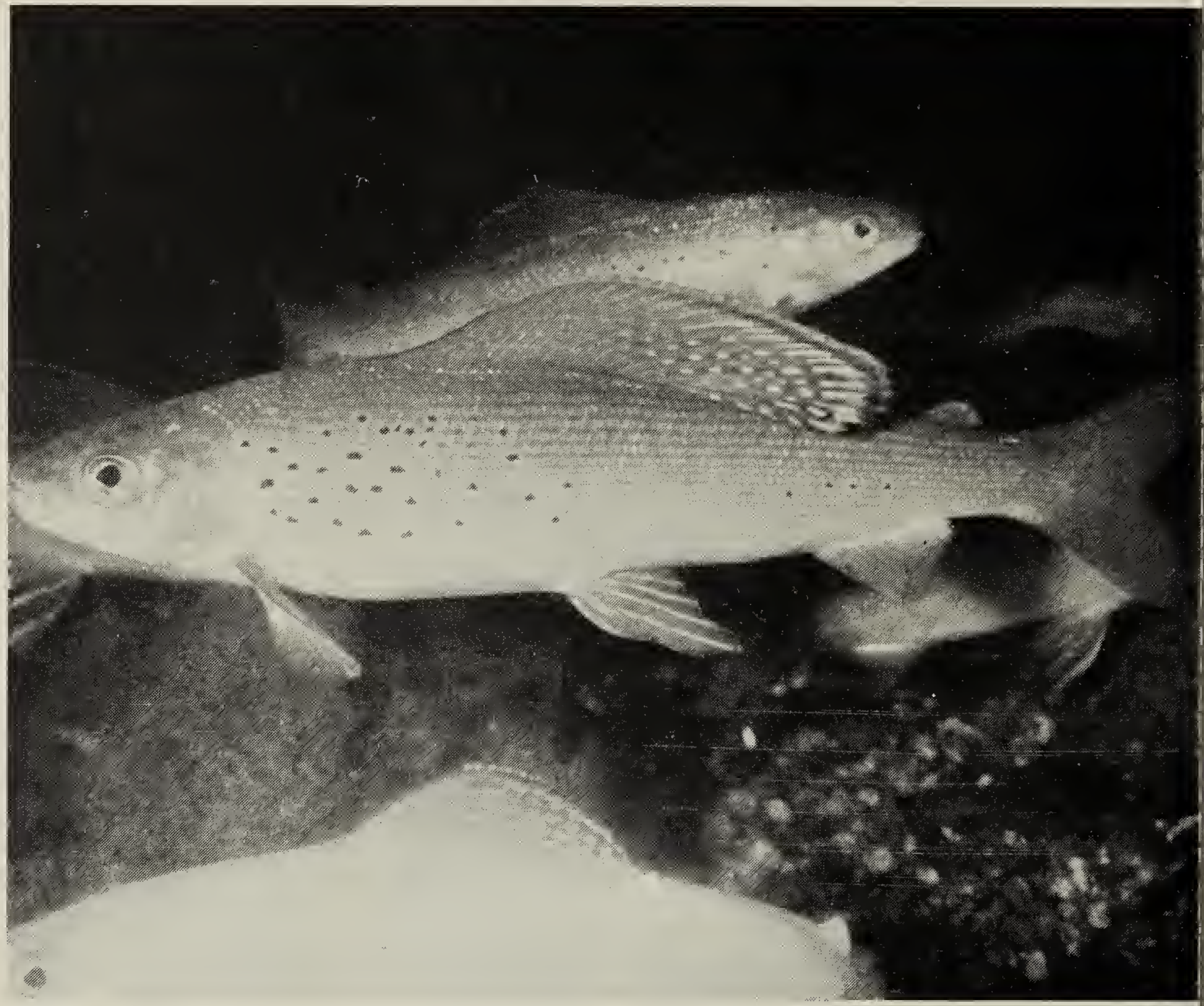
As a member of the economic community, a central Canadian aquarium would assume its place in the exchange of goods and services with other businesses. An aquarium would obviously require products, both commonplace and specialized, that would largely be available locally. Within the modern aquarium, it is anticipated that a retail gift shop, professionally run by competent staff, could be set up. Not only could such a facility supply revenue for a financially stable aquarium, but it could provide an opportunity for local craftsmen and writers to display their talents.

A simulated tour of the aquatic habitats of the prairies via programmed natural exhibits would be complemented greatly by modern technology. Enlightened interpretation of the organisms, facilitated by a multitude of modern audio-visual aids, would enhance the impact of the aquarium. Extensive graphics and recorded messages would serve to stimulate visitors to consider the importance of natural wetlands not only to all aquatic creatures, but also to themselves.

Upon entering the aquarium, the visitor would receive an explanatory presentation which briefly describes the concepts to be illustrated by the series of exhibits. When the visitor has completed his tour, additional information of lasting value in pamphlet form would be available. A comprehensive list of books and other literature, categorized into subject and age levels, would enable visitors who have had their interests stimulated, to delve further into the subject. A graphically potent aquarium could serve as a stimulating introduction to the aquatic world and also provide assistance to people wishing to further undertand the aquatic realm of our planet.

The primary goal of a public aquarium for the prairies could be an exposé of all forms of aquatic life for the community benefit. Aside from divers, the vast majority of Canada's population is not able to relate in a first-hand manner to the aquatic creatures of the region. Through an aquarium, each animal be it a renowned sportfish, tiny aquatic insect, frog, retiring snake or friendly seal, would have its fascinating ecology realistically portrayed. The underwater viewing approach toward the organism and its element is the basic tool of an aquarium's presentation. It allows one to comprehend the creature and its environment in the most consumate way short of actual residence in the water. By bringing organisms from widely separated regions throughout central Canada and putting them in a convenient location with the added dimension of underwater viewing, an aquatic centre would provide most of the public with its only exposure to the watery environment.

An aquarium is essentially a "living" museum which displays organisms as they relate to their ecology through a semi-natural environment. Numerous



Arctic Grayling. Phil Edgell

vital factors must be constantly monitored and directed by competent professionals to create such a living macrocosm. The prime requirement for the various exhibits is quality recycled water. This water would be obtained by an intricate filtration system, then circulated throughout the entire facility. Representative aquatic organisms would be collected and maintained in a healthy condition via various techniques of scientific husbandry. With such conditions fulfilled, visitors would be able to view living displays where the organisms would interact with their environment in a manner as closely as possible duplicating nature.

We of this generation have an immense and sobering responsibility that has been unassumingly thrust upon us. However innocently and unwillingly received, it nevertheless remains that the future of the aquatic environment must be covetously appreciated. It is time to make a commitment to these noble goals and to pursue them with the utmost haste and dedication. It is time for an enlightened citizenry to be introduced to an aquatic awareness. A contemporary aquarium could be the catalyst for such an awareness.

A BRIEF HISTORY OF NATURAL RESOURCES IN THE CYPRESS HILLS*

During the period when the dominant economy was the subsistence pattern of the Indian, man's impact on the land was minor. With the introduction of the white man's profit-oriented commercial system, however, this impact soon became significant. By 1879 the bison had been virtually eliminated from the Hills, the grizzly sometime in the 1890's, the elk by 1909, the cougar by about 1914, and the wolf by about 1925; in addition, the Hills were reported to be largely denuded of forest cover by about 1900 . . .

Today's tranquil vistas and peaceful surroundings belie the abundance of yesterday when the area possessed an animal life of great variety and plenty. It must have been a scene duplicated within our lifetime only in such places as the savannas of Africa . . .

Concern over the wanton depletion of wildlife had surfaced by the late 1700's. David Thompson, Canada's premier geographer, perceived this situation in the case of the beaver as early as 1793 when he wrote: "Every intelligent man saw the poverty that would follow the destruction of the Beaver, but there were no chiefs to control it; all was perfect liberty and equality. Four years afterwards almost the whole of these extensive territories was denuded of Beaver . . ." And regarding the bison, observant travellers in the United States in the 1830's were predicting its extermination . . .

With regard to the Cypress Hills, however, concern over bison depletion does not seem to have gained expression until the 1850's. In 1857 the plains Cree resolved in council that: "In consequence of the promises often made and broken by white men and half-breeds, and the rapid destruction by them of the buffalo . . . they would not permit either the white men or half-breeds to hunt in their territory . . ." . . .

In 1877 this (Northwest Territories) government made a forlorn attempt to save the bison by passing an ordinance aimed at reducing the rate of slaughter. These regulations forbade the use of buffalo pounds, the wanton destruction of buffalo at any season, and the killing of animals under two years of age. The impossibility of enforcing these regulations, however, rendered this program ineffective also. Nonetheless, the recurrent theme of man over-exploiting the resources of the Hills now had, in an incipient form at least, the crucial counter-balance of conservation concern; and evidence of this concern had been demonstrated at the official level . . .

For the settlers the resources of the Hills constituted a bounty of nature. The scope of their utilization was significant: "Journeys of up to sixty miles or more were made to haul timber. Twenty to forty wagons might daily pass along the main trails to the Hills". Furthermore, settlers from up to several townships away went to the benchland for hay to supplement their own supplies. In addition, dozens of irrigation projects sprang up in and around the Hills.

By the turn of the century, the unregulated demands placed upon these resources threatened their

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*Excerpts from: *Canadian conservation and the Cypress Hills*. By Carl Norbeck and J. Gordon Nelson. Prairie Forum Vol. 1, No. 1, p. 47-57. April 1976. The journal of the Canadian Plains Research Center, University of Regina, Regina, Sask.

depletion on a scale comparable to that of wildlife. In 1893 the Superintendent of the North West Mounted Police in Maple Creek reported: "the supply (of timber) in the Hills is rapidly getting short, owing to the encroachments of settlers and destruction by fire" . . .

One of the first forest reserves established under the Dominion Forest Reserves Act of 1906 was the Cypress Hills Forest Reserve, which included a portion of the Hills forest resource . . .

In 1930 the control of natural resources in Alberta and Saskatchewan was transferred to the provinces. In Alberta, the Cypress Hills Forest Reserve, initially managed under the Forest Reserves Act, eventually became today's Cypress Hills Provincial Park under the Provincial Parks and Protected Areas Act. In Saskatchewan, the Reserve, which comprised three blocks, became the Cypress Hills Provincial Forest (west block) and the Cypress Hills Provincial Park (centre block) under the Forest Act and the Provincial Parks and Protected Areas Act respectively. The east block was eventually designated a provincial community pasture.

Today . . . both the Alberta and Saskatchewan governments are evaluating new Master Plan studies aimed at reassessing multiple-use priorities and optimizing park uses.

FIRST RECORDS OF ROCKY MOUNTAIN JUNIPER IN SASKATCHEWAN

V. L. HARMS, Fraser Herbarium, University of Saskatchewan, Saskatoon and
DALE G. HJERTAAS, Ducks Unlimited, 5-1615 11th Ave., Regina, Sask.

During the last year two articles have appeared in the *Blue Jay* which have reported eastward range extensions of the Rocky Mountain Juniper (*Juniperus scopulorum* Sarg.) in Alberta. This erect shrub or small tree had long been known from the Waterton Lakes, Banff, and Crowsnest Pass areas of Alberta and most probably is present in a more or less continuous distribution between those Rocky Mountain sites.[6] [5] Recently single isolated "trees" of Rocky Mountain Juniper were reported from two more eastern Alberta localities, the first at Glenwood near Cardston (Sec. 34, T 4, R 27 W 4th) and the second in the Oldman River valley just north of Lethbridge.[4] Even more recently (1975) and significantly another single isolated "tree" of this species was found near the southeastern corner of Alberta (SE 1/4 Sec. 5, T 1, R4 W 4th).[7]

In the present article, we would like to report the recent discovery of naturally growing Rocky Mountain Junipers at three widely separated localities in southern Saskatchewan. The first finding of this species in Saskatchewan was by a group of University of Saskatchewan Biology students, including Marie Jasieniuk Wayne Renaud and K. J. Finley, who on May 25, 1975, discovered a tree at a location "somewhere southwest of Killdeer". These students, and in particular, Marie Jasieniuk, recognized

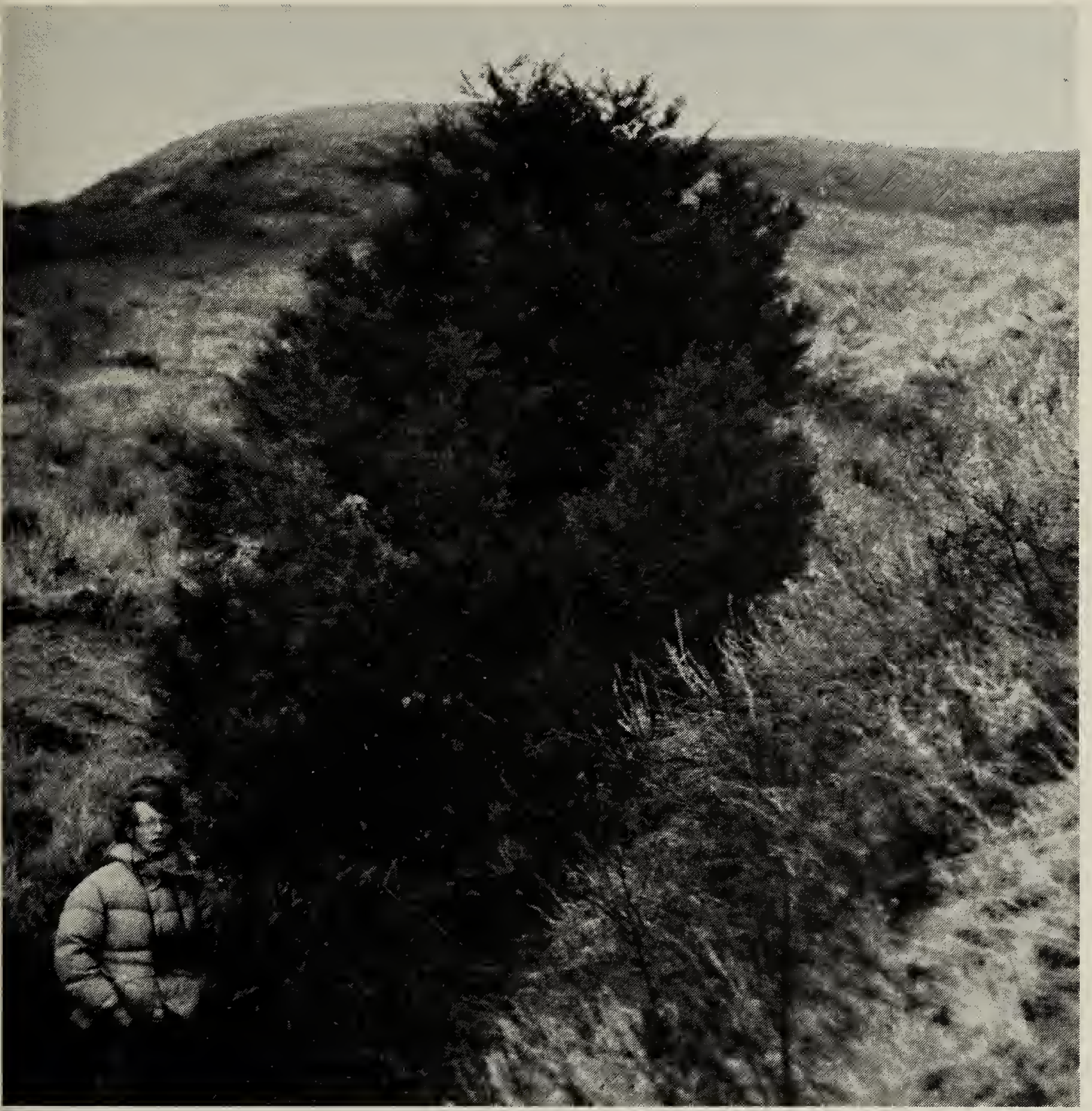

Figure 1. Rocky Mountain Juniper near Killdeer, Saskatchewan. Frank Dowling

the tree as something unusual for Saskatchewan and subsequently brought one of us (V.L.H.) a description of it, including its height (about 3 m or 10′) and habit (a single erect trunk), as well as a small twig fragment (which unfortunately was later misplaced), allowing for its positive identification as the Rocky Mountain Juniper.

This spring, the junior author (D.G.H.) attempted to relocate this Killdeer area site in order to obtain a voucher specimen, photograph, and full description to better substantiate the record. On April 17, 1976, a single isolated "tree" of Rocky Mountain Juniper (almost certainly the same one found in 1975) was located in the general Wood Mountain area about 7 miles west and 3-1/2 miles south of Killdeer (N1/2 Sec. 19 or S1/2 Sec. 30, T 1, R 4, W 3rd). The "tree" was about 3 metres (10′) high with a single erect trunk about 12 cm. (5″) in diameter at the base (Fig. 1). It was growing near the top of a steep, north-facing slope of a dry channel at the bottom of a canyon draining westward into Morgan Creek.

The immediately associated vegetation consisted mainly of the shrubs, Hoary Sagebrush (*Artemisia cana*) and Western Snowberry (*Sym-*

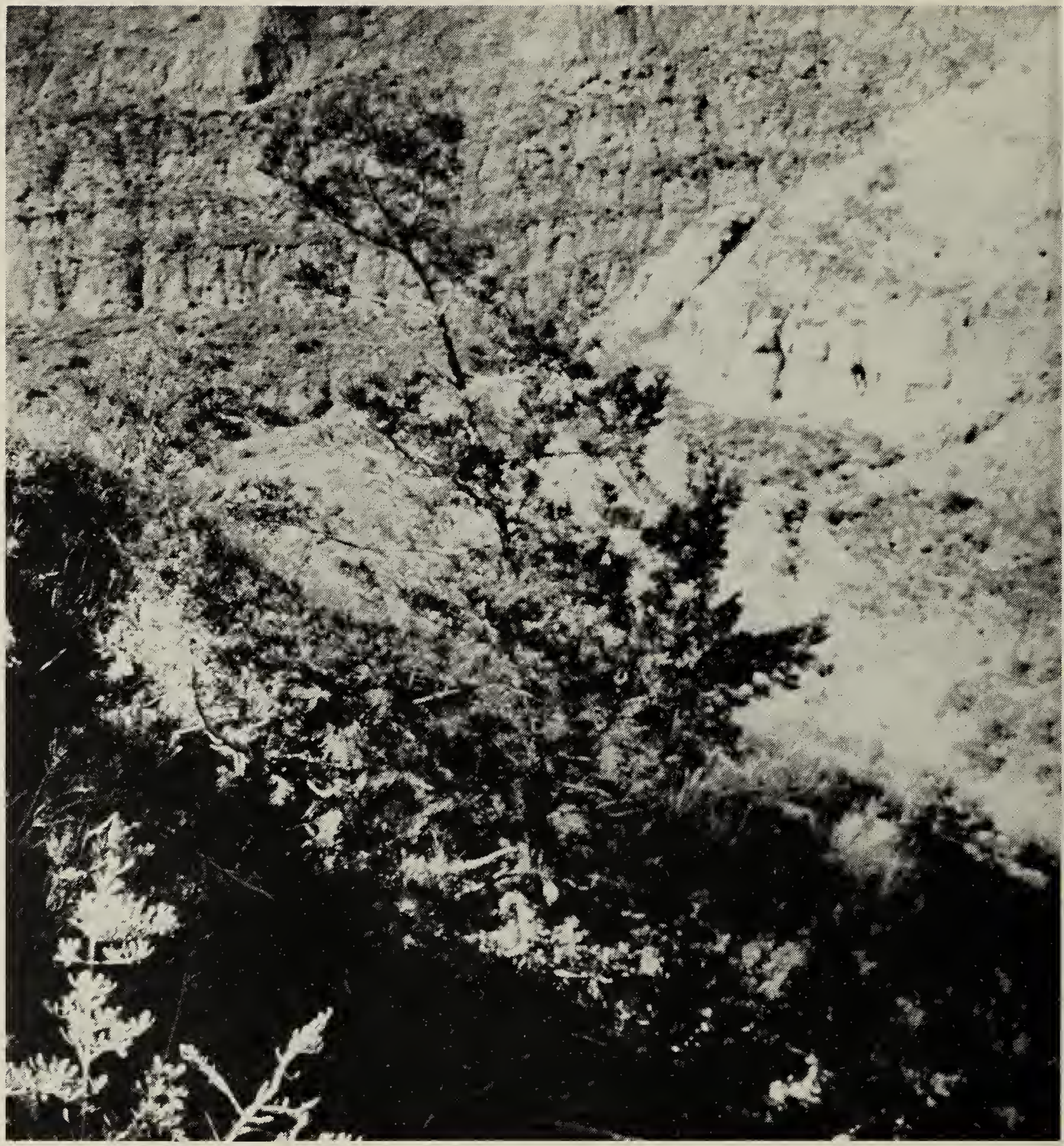

Figure 2. Rocky Mountain Juniper in Big Muddy Badlands. D. G. Hjertaas.

phoricarpos occidentalis Hook), with Spear-grass (*Stipa comata*) appearing to represent the most common graminoid herb. However, it was too early in the spring season to recognize most herbaceous species. A voucher specimen of this "tree" has been filed in the Graser Herbarium of the University of Saskatchewan as *D. G. Hjertaas, 17 April 1976* (SASK. No. 56850).

Last autumn, on November 5, 1975, the junior author (D.G.H.) discovered a small population of six "trees" of this species in the Big Muddy Badlands about 11 miles east of Big Beaver, Saskatchewan, 1/2 mile southeast of Big Muddy Lake, on the east side of a southward extending bay (NW1/4 Sec. 14, T 2, R 22, W 2nd). The "trees" were about 2-1/2 metres (8') high and had single erect trunks about 10 cm. (4") in diameter (Fig. 2). These Rocky Mountain Juniper "trees" were growing in a fairly close clump on a rather steep, open, clayey, north-facing slope of a canyon in the bottom of a large ravine leading into Big Muddy Lake; they were about 100 feet above the gully bottom and about 150 feet below the canyon lip. The most conspicuous associated plant species were the shrubs, Western Snowberry, Hoary Sagebrush and Creeping Juniper (*Juniperus horizontalis* Moench.); however, it was too late in the season (winter conditions existed) to allow for the recognition of all associated, especially herbaceous, plant species. A voucher specimen has been filed in the Fraser Herbarium of the University of Saskatchewan as *D. G. Hjertaas, 5 November 1975* (SASK No. 56760).

This locality was revisited by the junior author (D.G.H.) this spring on May 28, 1976. In addition to the original colony of six trees located at the first site visited, two additional sites of Rocky Mountain Juniper were discovered in nearby areas, but all still within the same quarter section given above. At the second site, three trees, 2 - 2-1/2 metres (7-8′) high, with basal trunk diameters of 7-1/2 - 10 cm. (3-4″), we found growing on the opposite, south-facing, steep slope of the same canyon as Site 1, about 20 feet below the canyon rim. They were on largely bare ground but associated with clumps of Hoary Sagebrush, Low Juniper (*Juniperus communis*), Creeping Juniper, Wheatgrass (*Agropyron* sp.), Prickly Pear Cactus (*Opuntia polycantha*), Western Snowberry and Woods Rose (*Roas woodsii*).

A third site, consisting of a single tree (Fig. 2) about 2-1/2 metres (8') tall and about 10 cm. (4") in diameter, was located in another canyon just over the ridge north of the canyon which contained sites 1 and 2. The tree was growing on a steep east-facing slope of a large gully cutting into the north-facing canyon wall, about a third of the way down the canyon side. The associated vegetation included predominantly both Creeping and Low Juniper as well as lesser amounts of Western Snowberry, Woods Rose, Wheatgrass and other grasses. A voucher specimen was collected from this tree at Site 3 and is filed in the Fraser Herbarium as *D. J. Hjertaas, 28 May 1976* (SASK No. 56762).

Thus the overall Big Muddy Badlands' population of Rocky Mountain Juniper consists of at least 10 trees, which is a noteworthy point when we consider that the other recently reported sites at Cardston, Lethbridge, and southeastern Alberta, and at Killdeer, Saskatchewan, each consisted apparently of a single isolated tree.

In addition to these two new localities for Saskatchewan from the Killdeer and Big Muddy Badlands areas, which are both well documented by voucher specimens, photographs and descriptions, there is now an additional good observational report by Wayne Runge (Wildlife Branch, Saskatchewan Department of Tourism and Renewable Resources, Saskatoon) of a "cedar tree", which by the description appears to be the Rocky Mountain Juniper, from the Frenchman River Valley near the United States border (N-1/2 Sec. 4, T 1, R 10, W 3rd). This site is within a mile of where the Frenchman River crosses the international boundary and is about 30 air miles southeast of Val Marie (about 24 miles south of Reliance and 24 miles east of Monchy). The "tree" was about 2 metres (6′) tall with a basal trunk diameter of about 8 cm. (3″). It was growing near the top of a steep east-facing slope of a gully which was about 8 feet deep and 20 feet wide, located on the lower slopes near the river valley floor. Growing in close proximity to it was the Low Juniper. The observer described the leaves of this specimen as being scale-like such as those of the Red Cedar (*Juniperus virginiana* L.) and Creeping Juniper. Being more familiar with the eastern Red Cedar and not aware of the northwestward limitation of its range or the fact that no tree-sized or erect shrub juniper (or cedar) species with scale-leaves had yet been reported for Saskatchewan, the observer did not obtain a voucher specimen or a photographic record of this "tree". However, it seems likely that this was a Rocky Mountain Juniper.

The Frenchman River site is about 160 miles east of the south-eastern Alberta locality and about 35 miles west of the Killdeer site.[7] The latter is about 75 miles west of the Big Muddy Badlands population of Rocky Mountain Juniper, which is now the easternmost record for Canada. These first records for this species in Saskatchewan extend its known Canadian range about 250 miles eastward from the southeastern Alberta, and over 400 miles east of the Canadian Rocky Mountain sites. However, while certainly significant and representing interesting first reports for the species in Saskatchewan, these range extensions are less spectacular than it might first appear, when the overall known North American, and not just Canadian, distribution of the Rocky Mountain Juniper is considered (see distribution map of Fig. 3). Although the species had not been recorded east of the Rocky Mountains in Canada until 1975, disjunct small colonies or sometimes large populations have been known from numerous localities east of the Rocky Mountains across central and eastern Montana and Wyoming to the western Dakotas.[5] [8] Of particular interest to us is the species' known occurrence at various sites along the valley breaks of the Missouri River and its tributaries in Montana and western North Dakota, where it occurs most commonly on relatively steep coulee or ravine slopes. It is especially abundant in the Little Missouri River Badlands in western North Dakota, a locality which is even farther east than our presently recorded Big Muddy Badlands' population in Saskatchewan.[8]

On the North American distribution map of the Rocky Mountain Juniper (Fig. 3), our new Saskatchewan locality records, as well as those reported by Kuijt and Trofymow and Smith and Wallis for Alberta east of the Rocky Mountains, are indicated by an "X".[4] [7] The Cardston and Lethbridge sites are both located in the South Saskatchewan River drainage system, but are within 30 and 75 miles, respectively, of previously known sites for the species in the Rocky Mountains. The Big Muddy Badlands, Killdeer and Frenchman River Valley sites in Saskatchewan, and the southeastern Alberta site are located in the Big Muddy Creek, Poplar River, Frenchman River, and Milk River watersheds, respectively, all of these representing northward-extending tributaries of the Missouri River. Furthermore, all of these sites are less than 100 miles distant, and sometimes much less, from previously recorded localities for the Rocky Mountain Juniper along the Missouri River valley drainage in northeastern Montana.

In both of the recent new reports of the Rocky Mountain Juniper at sites in Alberta east of the Rocky Mountains, the authors strongly subscribed to the theory of long-distance dispersal as the explanation for these isolated distributions.[4] [7] Usually this is indeed the most logical interpretation for such occurrences, especially when one finds only single isolated individuals located at a considerable distance from the previously known range of a species. We also believe that Smith and Wallis are quite correct in pointing southward rather than westward for the most probable seed source of such possible long-range dispersals.[7] Such long-range dispersal, perhaps by avian transport of juniper "berries" from Missouri River valley populations in northeastern Montana, may well be the best explanation for the origin of our southern Saskatchewan sites of Rocky Mountain Juniper. However, this is not the only interpretation possible. In our opinion, most historical phytogeographers, when observing the overall present-day North American distribution of this species (Fig. 3), would tend to interpret it as a rather good example of a Cordilleran (Rocky Mountain) species which at one time, perhaps in early post-Pleistocene times, probably had a wider and more continuous distribution to the east and probably north (and also to the west, although perhaps at an earlier time), but which has since, likely as a result of changing climates, contracted its range leaving behind disjunct populations in particularly favourable habitats such as in the Black Hills, Little Missouri River Badlands, breaks along the Missouri

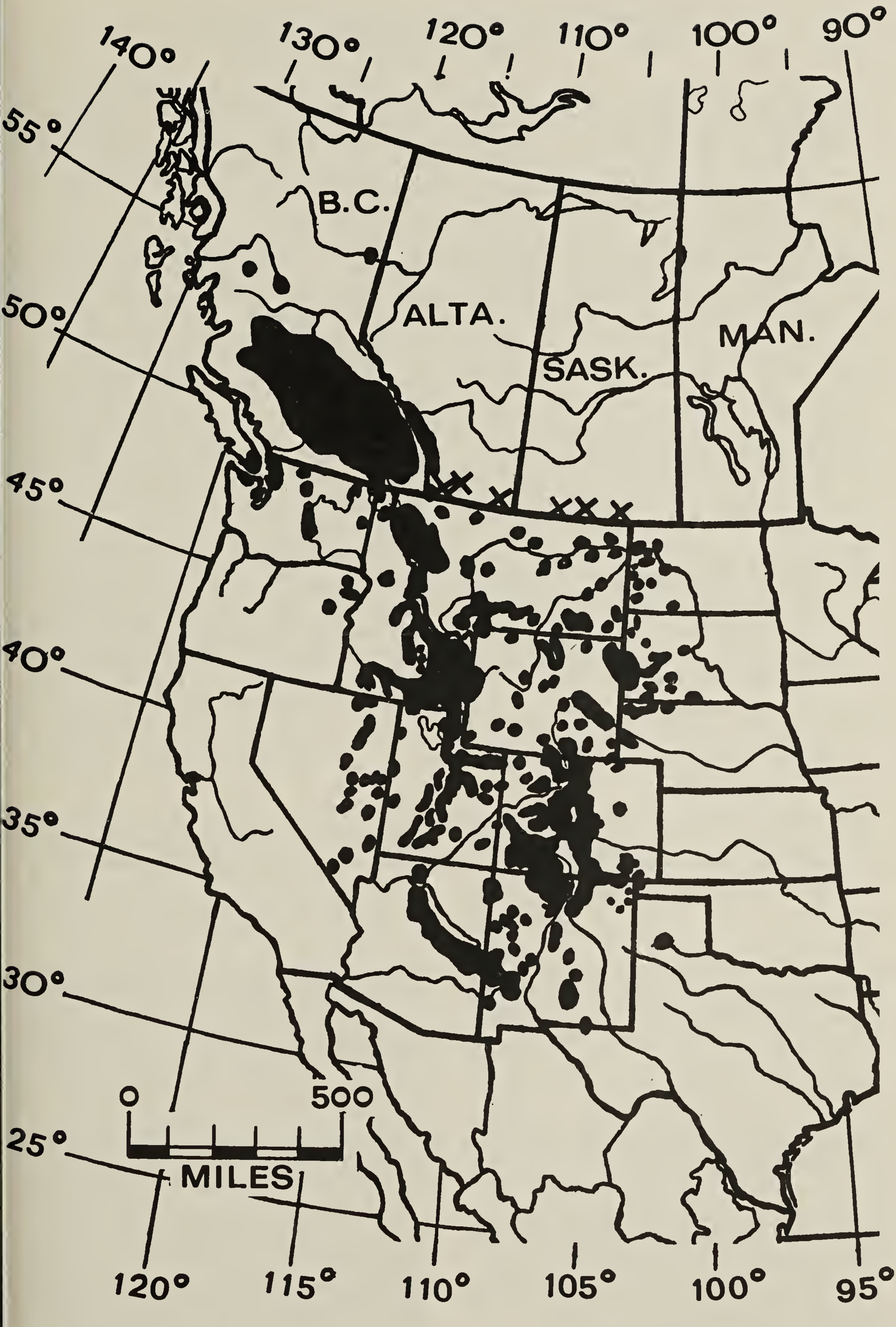

Figure 3. Distribution map of Rocky Mountain Juniper in North America (Modified from Little, 1971). Recently reported new records east of the Rocky Mountains in Alberta and Saskatchewan are indicated by an "X".

IDENTIFICATION KEY FOR THE NATIVE JUNIPERS (GENUS JUNIPERUS) IN SASKATCHEWAN

1(a) Leaves whorled, 3 at each node, all being awl-shaped needles rather than scale-like, (5) 7-12(15) mm (about 1/3-2/3") long, 1-2 mm (<1/8") wide, jointed at the base, with a whitish strip (containing the stomata) on the upper surface, and lacking a glandular dot on the back surface; plants are low widely spreading shrubs, either prostrate or semi-erect, usually less than 1 metre high . . . *Juniperus communis* L. **Low Juniper**

2(a) Plants low, flat-topped shrubs, often forming circular clumps with the main trunks at least partially erect, 4-10 (15) dm (or 1-1/2-3(5)') high; leaves spine-tipped, 7-12 mm (1/4-1/2") long, quite divergent, with the whitish strip on the upper surface mostly narrower than half the leaf width; (merging into the next variety) . . . *J. communis* var. *depressa* Pursh.

2(b) Plants forming close ground mats, entirely prostrate or decumbent, with the main stem as well as branches trailing, or if the main stem somewhat erect, shorter than 3 dm (1') high; leaves abruptly sharp-pointed but not spine-tipped, averaging somewhat shorter, 5-10 mm (mostly <1/3") long, mostly strongly ascending, with the whitish strip on upper surface usually wider than half the leaf width; (merging with the previous variety) . . . *J. communis* var. *saxatilis* Pallas (=var. *montana* Ait.)

1(b) Leaves opposite, with only 2 at each node, mostly scale-like, less than 3 mm (1/8") long [except leaves of juvenile shoots which are sometimes awl-shaped and longer, but mostly less than 5(7) mm (<1/4") long, but not basally jointed, and lacking a whitish strip on upper surface, usually with a conspicuous elongated glandular dot on the back surface; plants are prostrate shrubs to erect trees.

3(a) Low trailing shrubs with the main stems and branches all prostrate or with only their ends upturned; scale leaves very pungent, abruptly ending in a sharp, short but distinct spine-tip . . . *Juniperus horizontalis* Moench: **Creeping Juniper**

3(b) Shrubs or small trees, 1-5 (12) metres (3-15') tall, more or less erect with single main trunk; scale leaves less pungent, with tips blunt to rather sharply pointed, but seldom ending in a short spine . . . *Juniperus scopulorum* Sarg. - **Rocky Mountain Juniper**

and Yellowstone River valleys, and numerous other isolated sites, including possibly those in the southern Saskatchewan badlands. The presence of a population of at least 10 individuals at the Big Muddy Badlands locality, rather than just a single isolated individual, at least suggests the real possibility that these represent a relict population rather than newly established migrants. The species as a whole may yet be tending toward a further contraction of range with the impending extinction of its more peripheral populations such as those in southern Saskatchewan.

However, whatever their actual origin in the province might have been, we would suggest that other sites for the Rocky Mountain Juniper may very well exist in southern Saskatchewan, especially near the United States border in the various areas of badlands between Val Marie and the Missouri Couteau region east of Big Muddy Lake, and also in the southern Cypress Hills region. It should be looked for by botanists and naturalists who may find themselves in these areas of the province, which have, for the most part, been relatively inaccessible to most persons except the ranchers who have utilized the land for grazing.

In its leafy twig and reproductive structures, the Rocky Mountain Juniper is similar to our common

Creeping Juniper. It differs in its greater height (1-1/2 - 12 metres), its habit as a more or less erect shrub or small tree with a single main trunk in contrast to the Creeping Juniper which is entirely prostrate with both the main stem and branches trailing along the ground. The Rocky Mountain Juniper's scale-leaves are also less pungent when crushed, and blunt to abruptly sharp-pointed but not as sharply spine-tipped as those of the Creeping Juniper. These two species apparently are quite closely related and purported hybrid types have often been reported where they coexist.[3] Such intermediate forms, therefore, might possibly also be expected in southern Saskatchewan. They are characterized by a short more or less erect main stem (or trunk), diffusely branched, partially decumbent (i.e., branches spreading but upright towards tips) growth form, seldom reaching more than one metre in height, and have been named *J. scopulorum* var. *patens* Fassett or *J. X. fassettii*, Boivin.[3] [1] These should at least be looked for in southern Saskatchewan.

In the key above, numbers in parentheses are extremes beyond normal range.

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[5] LITTLE, E. L. 1971. *Atlas of United States trees. Vol. I Conifers and Important Hardwoods.* Miscellaneous Publication No. 1146, Forest Service, U.S. Dept. of Agriculture, Washington, D.C. (Maps 30-W and 30-N).

[6] MOSS, E. H. 1959. *Flora of Alberta,* University of Toronto Press; p. 35.

[7] SMITH, W. W. and C. A. WALLIS. 1976. Extralimital occurence of Rocky Mountain Juniper in southeastern Alberta. *Blue Jay* 34(2): 67-68.

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BIRD PREDATION ON THE YELLOW-HEADED SPRUCE SAWFLY, WITH NOTES ON THE LARCH SAWFLY

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The yellow-head spruce sawfly (*Pikonema alaskensis*) is a defoliating insect (Order Hymenoptera, Family Tenthredinidae), found from Alaska and British Columbia to New Brunswick and Maine. Its larvae attack the needles of several species of spruces.[2] Full-grown larvae are about 0.75 inches long, with a chestnut-brown head and a yellowish-green body with darker lengthwise grayish-green stripes (Fig. 1). Infestations rarely occur in closed forest but are usually confined to small ornamental spruces or plantations of young trees. However, they may cause the complete

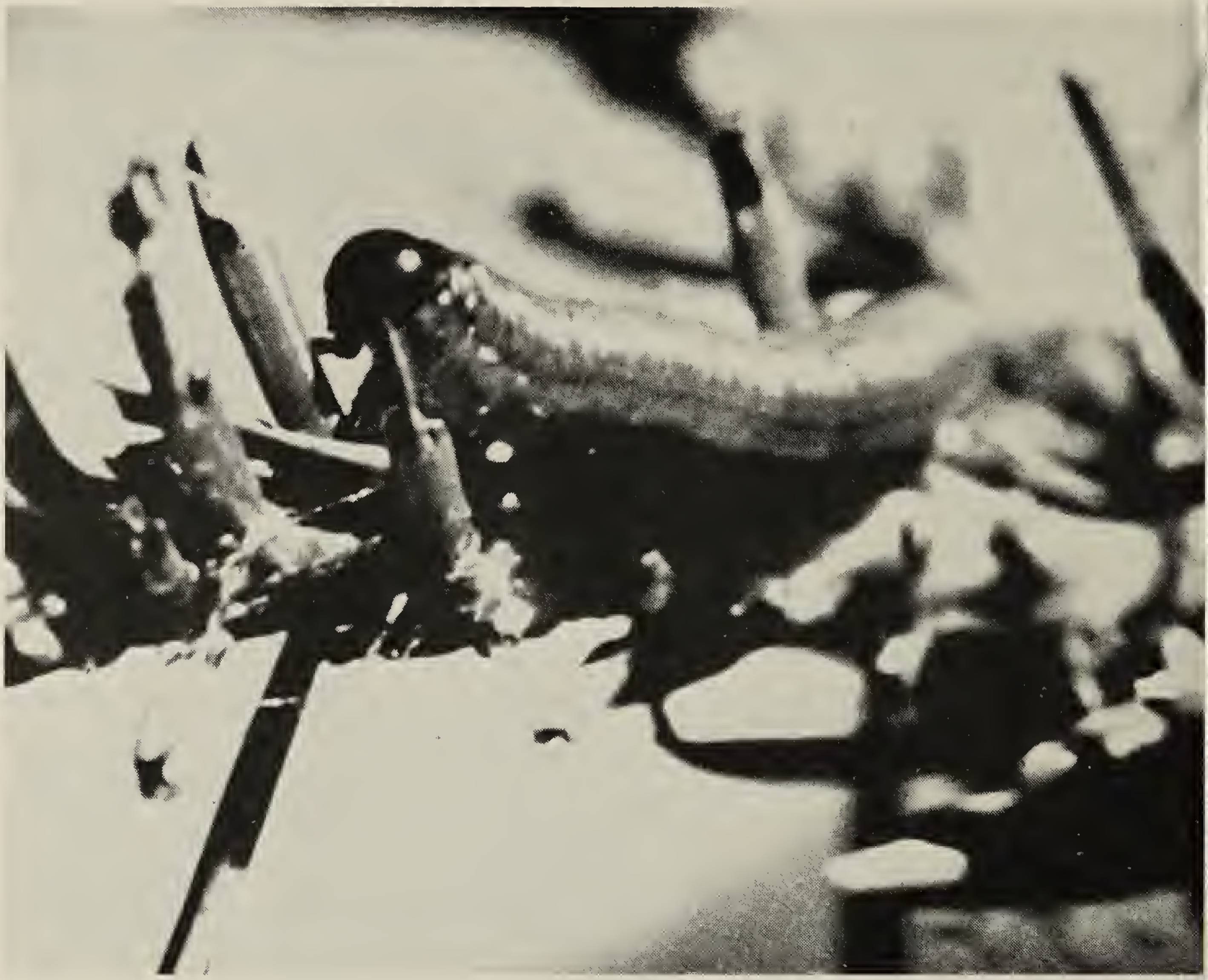

Figure 1. Larva of yellow-headed spruce sawfly. Roger Eddy (Courtesy Parks Canada).

defoliation and eventually the death of many trees. In 1972, I observed a small outbreak of spruce sawflies in Elk Island National Park, about 25 miles east of Edmonton, Alberta, and noted especially the activities of avian predators of the larvae.

The life history of the sawfly has been reviewed by Nash.[4] The winter is spent underground in a cocoon. Adults emerge in late spring, and the females cut shallow slits in spruce needles, in which the eggs are deposited. In 6 to 8 days, the larvae hatch and begin to feed on the needles for a feeding period that lasts from 30 to 40 days. Finally the larvae drop to the ground, burrow into the soil, and spin a cocoon. The sawfly larvae appear to prefer new-growth needles for feeding; thus the tops of trees and tips of branches are defoliated first. A stand, once infested, is often defoliated several years in succession; this increases the chances that the trees will be killed.

In Elk Island National Park, the sawfly outbreak was mainly confined to ornamental plantings of white spruce (*Picea glauca*) in parking lots near Sandy Beach, on the east side of Astotin Lake. Most of the trees were 4 to 12 feet tall. In some plantings, many trees were largely or completely defoliated (Fig. 2), but in other areas the damage was light. The outbreak was first noticed in 1971 (Chief Park Warden V. R. Jones, pers. comm.), but was more severe in 1972. In 1972, damage was first evident in late June; I made observations on bird predation between 15 and 22 July.

The main purpose of my observations was to roughly determine the extent of bird predation on yellow-headed spruce sawfly larvae; I could find no previous accounts of birds preying on this species. I maintained a continuous watch on a stand of infested spruces from 09:00 to 11:00 on July 15, 09:00 to 11:00 on July 16, and 08:30 to 09:50 on July 22. Four bird species definitely ate spruce sawfly larvae, and five other species foraged in or beneath the spruces and were suspected of eating larvae.

Known Sawfly Predators

PURPLE FINCH: This species was the most persistent and most voracious predator of sawfly larvae. A group of four Purple Finches, including two adult males, spent considerable time feeding on larvae on each day of observation. They hunted larvae for at least 59 minutes out of the total of 320 minutes I spent watching the spruces on July 15, 16, and 22. The finches hunted larvae systematically, all four spending several minutes in one tree and then moving to another. They were never seen foraging other than in spruce trees, and may have fed almost exclusively on sawfly larvae during the study period. Because of the birds' rapid movements while foraging, I could not count the number of insects eaten but I estimated the consumption rate at perhaps five larvae per minute.

Chipping Sparrow: At least one adult male and two fledglings were in the spruces throughout the observation period. The male ate some sawfly larvae, but spent most of his time singing. The fledglings were seen hunting larvae several times, but appeared to receive most of their food from the adult. Sawfly larvae probably made up a large part of the Chipping Sparrows' diet. The sparrows spent nearly all their time in the spruces, and, unlike the Purple Finches, had probably nested there.

American Robin: On July 22, three or four of a group of 10 juveniles spent about 35 mintues in the infested spruces, eating sawfly larvae; the rest of the birds foraged on the ground. Also, two Robins fed beneath the spruces on July 16, and may have picked up fallen larvae.

Northern Oriole: A female or juvenile spent 2 minutes feeding on sawflies on July 16. On the 15th, an adult male, perched in an aspen among the spruces, ate an insect larva which may have been a sawfly.

Suspected Sawfly Predators

Common Grackle: A family group of six foraged beneath the spruces for a short time on July 22, and two of them perched briefly in the trees and appeared to pick off a few larvae. Two Grackles also foraged beneath the trees on July 16.

Clay-Colored Sparrow: At least one adult male and one fledgling were present. They were not seen actually feeding on sawflies, but probably did so, as they spent nearly all their time in the spruces.

Three other species (Common Flicker, Black-billed Magpie, and Red-winged Blackbird) were seen foraging on the ground beneath the spruces, and may have picked up fallen larvae, but did not forage in the trees themselves.

Larch Sawflies

The Larch sawfly (*Pristophora erichsonii*), unlike the yellow-headed spruce sawfly, is a pest of considerable economic importance. Its larvae feed on the foliage of tamarack (*Larix laricina*), and may cause total defoliation and extensive tree mortality over large areas. During my observations on yellow-headed spruce sawflies in Elk Island Park, I noted larch sawfly larvae in a number of tamarack stands, and attempted to see if any bird predation on larch sawflies occurred. Two large tamaracks near Sandy Beach, near the infested spruce stands, had large numbers of larch sawfly larvae and were badly defoliated. Several other tamarack stands, mainly near the North Gate of the park, were visited on July 15, 16, 18, and 22; sawfly larvae were present in some stands but none was severely defoliated. Although I spent several hours looking for bird predation on larch sawflies, I saw none.

Bird predation on larch sawflies has been thoroughly studied in Manitoba where stomach contents of 54 bird species were collected in infested tamarack stands.[1] Many species

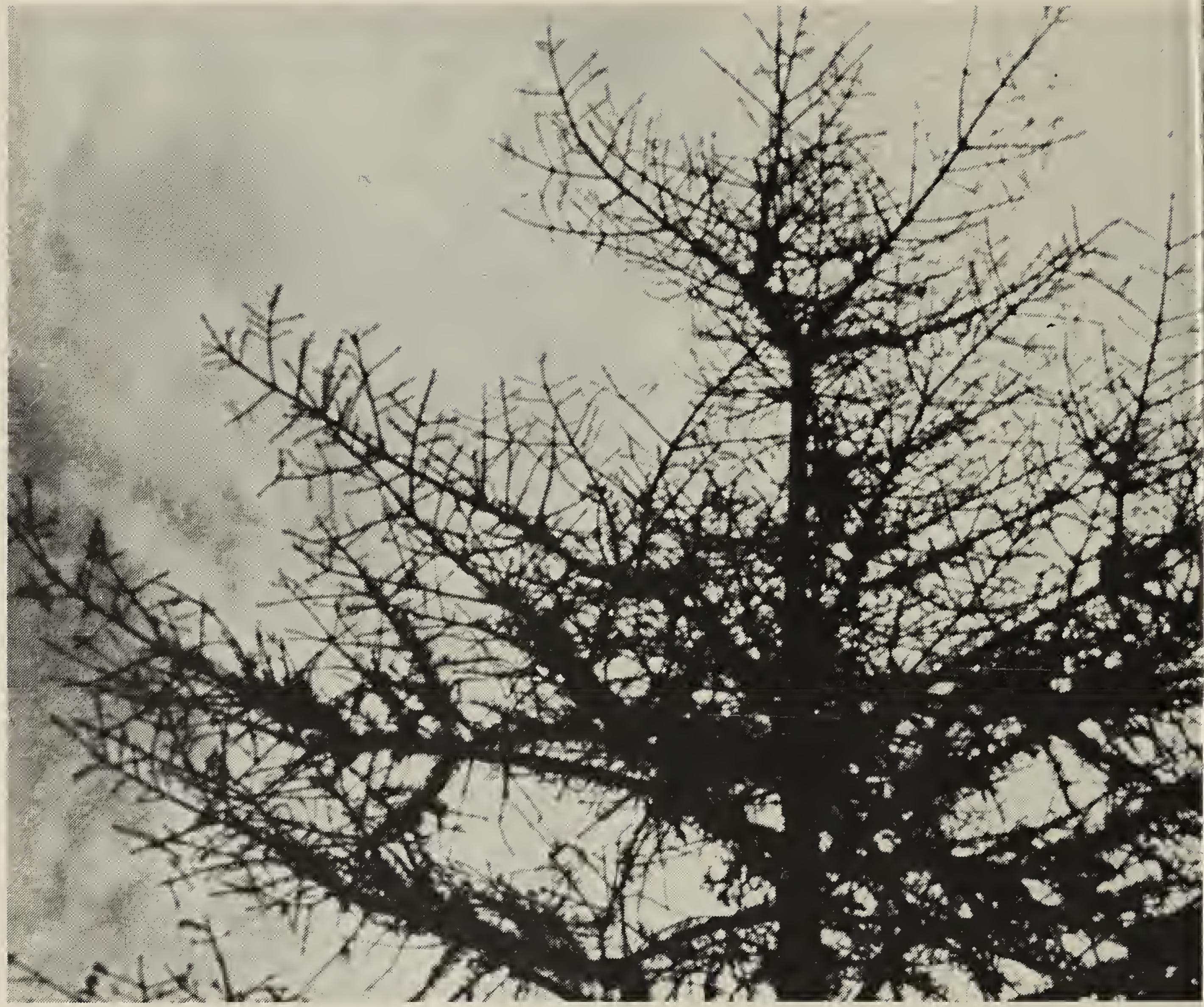

Figure 2. Young white spruce near Sandy Beach, Elk Island National Park, showing defoliation caused by sawfly larvae.

preferred adult sawflies to larvae. In a severely-infested tamarack stand, it was calculated that birds could remove only 0.5% of the larvae and 6% of adults; however, in a stand with a moderate sawfly density, the corresponding figures were 6% of larvae and 65% of adults.

Interestingly, the 3 species I observed most often feeding on spruce sawflies — Purple Finch, Chipping Sparrow, and American Robin — were also among the most important predators of larch sawflies in the Manitoba study, together accounting for 50.3% predation on larvae.[1]

The results of a number of studies of bird predation on defoliating insects support the general conclusion that predation by birds may have little effect in checking insect numbers when other factors, such as favourable weather, permit the development of an outbreak.[1] [3] However, when insect densities are low, birds may play an important role in limiting their populations.

Control Measures for Spruce Sawflies

In 1972 outbreak of yellow-headed spruce sawflies in Elk Island National Park, because of the small area affected, control measures against the sawflies were not necessary. However, if control of an outbreak is desired, the best approach is probably to apply an insecticide such as Malathion, which has a high toxicity to insects but a very low toxicity to birds and mammals.[5] It should be applied when the larvae are young. Because the sawflies usually do not disperse far, it is likely that one thorough spraying at the proper time would protect the trees for several years.

Acknowledgments:

These observations were made while I was employed as a Seasonal Naturalist with Parks Canada. W. Jack Schick, Chief Park Naturalist of Elk Island National Park, suggested that I observe the sawflies. Roger Eddy, former Park Warden, photographed the sawfly larvae. For comments on the manuscript, I thank W. Jack Schick and Jerome A. Jackson.

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FISH-CATCHING MUSKRAT

DICK DEKKER, 3819-112A Street, Edmonton, Alberta.

On May 30, 1976, I was quietly sitting on the Ducks Unlimited dam at Beaverhill Lake, Alberta when a muskrat appeared. It swam up from the southeast slough and headed for a small island, wedged in between the washed-out cement foundations of the eastern wing of the dam. Just before reaching the sandy shore, the rat dived and emerged with what looked like a small fish. When it dived again and came up with a similar food item, I kept the 10-power glasses focussed on the animal. It climbed on land about 20 meters away from me. To my surprise, its meal was indeed a fish, likely a stickleback that abounds in the lake. During the next 30 minutes, the muskrat caught and ate 11 more. After a spell of grooming, it dived and captured an additional nine.

The method of transporting and eating these fish was the same throughout. Upon emerging from each dive, the fish was held sideways in the rat's mouth. On land, the animal transferred the fish to its front feet. At this point the fish often flopped vigorously. The tail was invariably held upward, and the rat consumed the fish like a monkey would eat a banana, biting off chunks from the tail on down. When finished, the rat licked its front paws for a few moments before re-entering the water. Its dives lasted from 3 to 15 seconds. It took 15 to 25 seconds to eat a fish.

Finally, before swimming away to the slough, the rat climbed onto the bank of the islet and cut two mouthfuls of green grass. They were carried down and deposited in the water, before being eaten for dessert.

In the literature available to me, I found the following information on the food of the muskrat. Soper mentions only juicy plants.[3] Murie writes that the muskrat is not entirely vegetarian and may feed on clams and mollusks.[2] Other than plants, Banfield lists freshwater mussels, small turtles, frogs, salamanders and slow-moving catfish.[1]

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GULL PREDATION ON STOCKED TROUT FINGERLINGS

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The prairie aquaculture industry is confronted with many problems, among which is the early mortality of planted trout fingerlings. Scientists at the Freshwater Institute, Winnipeg, have suggested that bird predation is a major cause of this early season mortality.

On June 8, 1976, Ray Begrand, Paul Bashuk and I witnessed a spectacular case of gull predation on trout fingerlings. We were stocking a 20-acre farm pond just west of Krydor, Saskatchewan, with 2,400 3-inch brown, brook and rainbow trout fingerlings (800 of each species) in the evening. We noted seven Franklin's Gulls along the bulrushes while we were releasing the fingerlings in mid-pond by boat.

The fish were transported to the stocking site in 12 cubitainers filled with water and oxygen. The fingerlings in two of the containers showed signs of stress from lack of oxygen and when released into the open water, some of them began spinning and jumping erratically at the surface. This activity seemed to attract the gulls, for within 5 minutes there were 30 birds hovering overhead and swooping down to pick up fish near the surface. On diving for fish, the gulls only dipped their head and necks below the water surface.

Our presence on the pond had no effect on their voracious feeding, which took place even within 20 feet of the boat. We went to shore and attempted to frighten away the birds by firing several rounds with a 22-calibre rifle, but to no avail.

We followed the activity of one gull for a 10-minute period and counted 10

The dugout. Paul Bashuk

dives, at least eight of which were successful. This was after the gulls had already been feeding for about an hour; thus their prey was considerably less plentiful and their appetites must have been satiated somewhat by the time we took count. The flock of gulls conceivably devoured 700-800 fingerlings in the first hour after the fish were stocked, suggesting heavy mortality for the evening.

We stocked another 5-acre pond just over the ridge from this pond with 600 fish (200 of each species) an hour earlier. There were nine gulls on the water when we stocked the fish, but they did not engage in active feeding as did the gulls on the first pond. All these fingerlings were in good condition going into the water and dispersed without any surface activity. Only occasionally did a gull dip below the surface, presumably feeding on aquatic invertebrates or fingerlings swimming by. The different behaviour of the birds on these two ponds suggests that the gulls were attracted by fingerlings spinning and jumping at the surface.

Trout fingerlings are particularly susceptible to predation shortly after stocking. Hatchery-reared trout possess inherent traits, such as surface response, schooling tendency, lack of wariness, and lack of foraging experience, which may place them at a definite disadvantage when they are required to make a rapid adjustment to conditions in the wild.[1] Research at the Freshwater Institute in 1975 has indicated that survival of trout was improved 30 to 40 percent by caging the fingerlings in the lake for two weeks prior to their release (pers. comm. Dr. G. B. Ayles).

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SETTLEMENTS OF THE GRASSLANDS AND THE GREATER PRAIRIE CHICKEN

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Settlement of the western Canadian prairies had a great impact on bird life. Certain species failed to adapt to settlement and disappeared; others changed to conform to the changed environment and survived. Examples are the Turkey Vulture, which is now very scarce or absent from the region, and the Brown-headed Cowbird, which changed from an association with buffalo to an association with cattle.

Population densities of still other species changed radically. One of these was the Greater Prairie Chicken, known also as the pinnated grouse, squaretail or prairie hen. It migrated into the country from Minnesota and North Dakota and its population increased rapidly from 1881 to about 1900, then declined equally rapidly to very low numbers by 1925. The last reliable records of the species were a specimen taken near Youngstown, Alberta, in 1938 and another in Saskatchewan in 1943.[7, 11] More recent sightings have been reported.[1, 4, 8]

The purpose of this study was to relate the fluctuations in numbers of the Greater Prairie Chicken to the elimination of the buffalo and the later settlement of the Prairie Provinces.

The Canadian prairie was grazed from time immemorial by the buffalo. Wasteful, often senseless slaughter of these animals began about 1840 and ended in their virtual extinction in 1879.[5] With the removal of the buffalo, and the presence in the Territories of the North-West Mounted Police, grass became available to the stockman and an environment was created in which he could thrive. Although cattle had been kept on the various fur trading posts of the Hudson's Bay Company from 1702 onwards, it was not until the early 1880's that livestock in appreciable numbers began to move on to the Canadian plains. The ranges were not fully stocked until about 1920 (Fig. 1).

With the buffalo gone, the Indians faced starvation and, hence, turned to other animals. Soon the prong-horned antelope was reduced to a fraction of its former numbers; the elk was killed or driven from the plains. Smaller game, even ground squirrels and other rodents, suffered in turn. By about 1880, the western prairie was devoid of grazing animals and, because the late 1870's and early 1880's were much wetter than normal, the grass grew luxuriantly. Even though prairie fires continued to remove some topgrowth, the prairies benefitted from non-use and produced a cover of grass the like of which had never been seen before and which will never be seen again. Light use continued until about 1920.

The period of non- or light-use is the period the first settlers experienced and is the period to which much of the written record refers. It was one of the most unusual periods in the history of the grasslands of the Prairie Provinces. The ranges of today would probably compare very favorably with the ranges of, for example, the 1840's when the buffalo slaughter began; they would not compare very favorably with the ranges of the 1880's, which were stimulated by non-use and abnormally wet seasons (Fig. 2).

In a parallel development to ranching, farming spread westward from Manitoba's Red River Settlement starting about 1871. Numbers of homesteaders gradually increased but it was not until the period immediately before and during World War I that most of the prairie croplands were broken and farmed.

During this interval, from about 1881 to 1925, the Greater Prairie Chicken migrated into the western prairies, reached a population density estimated at over a million by the early 1900's and then declined (Fig. 1).[10]

The species was first noted in Manitoba in 1881 when a specimen was shot near Winnipeg.[3] It was recorded at Portage La Prairie in 1882 and at Indian Head in 1895. By 1901, the species was plentiful in the district between Moosomin and Qu'Appelle, in the foothills west of Calgary, in the region between Macleod, Alberta, and the international boundary, and in the Sullivan Lake region of Alberta.[2]

Because of the abundance of Prairie Chickens, hunting was permitted. At first there were no restrictions. By about 1900, the hunting season lasted from September 16 to December 14 and the bag limit was 20 birds per day.[2] Shortly after the turn of the century, the seasonal bag was 200 birds.[9]

But by March 1917, the *Lethbridge Daily Herald* reported that the Alberta legislature was considering the imposition of a closed season on Prairie Chicken. Under the heading, "Amendments to the Game Act", the paper reported in April that, "The shooting of pinnated grouse (prairie chicken) is prohibited until October 1, 1918". A front page story on April 7, 1920, stated that the chicken season was to be ". . . limited to two weeks this year." The days of abundance were over.

Habitat preferences of the species were mainly responsible for the rapid increase and decline in its population although hunting pressure may have played a part in the latter. The Greater Prairie Chicken requires tall grass vegetation as protection for roosting

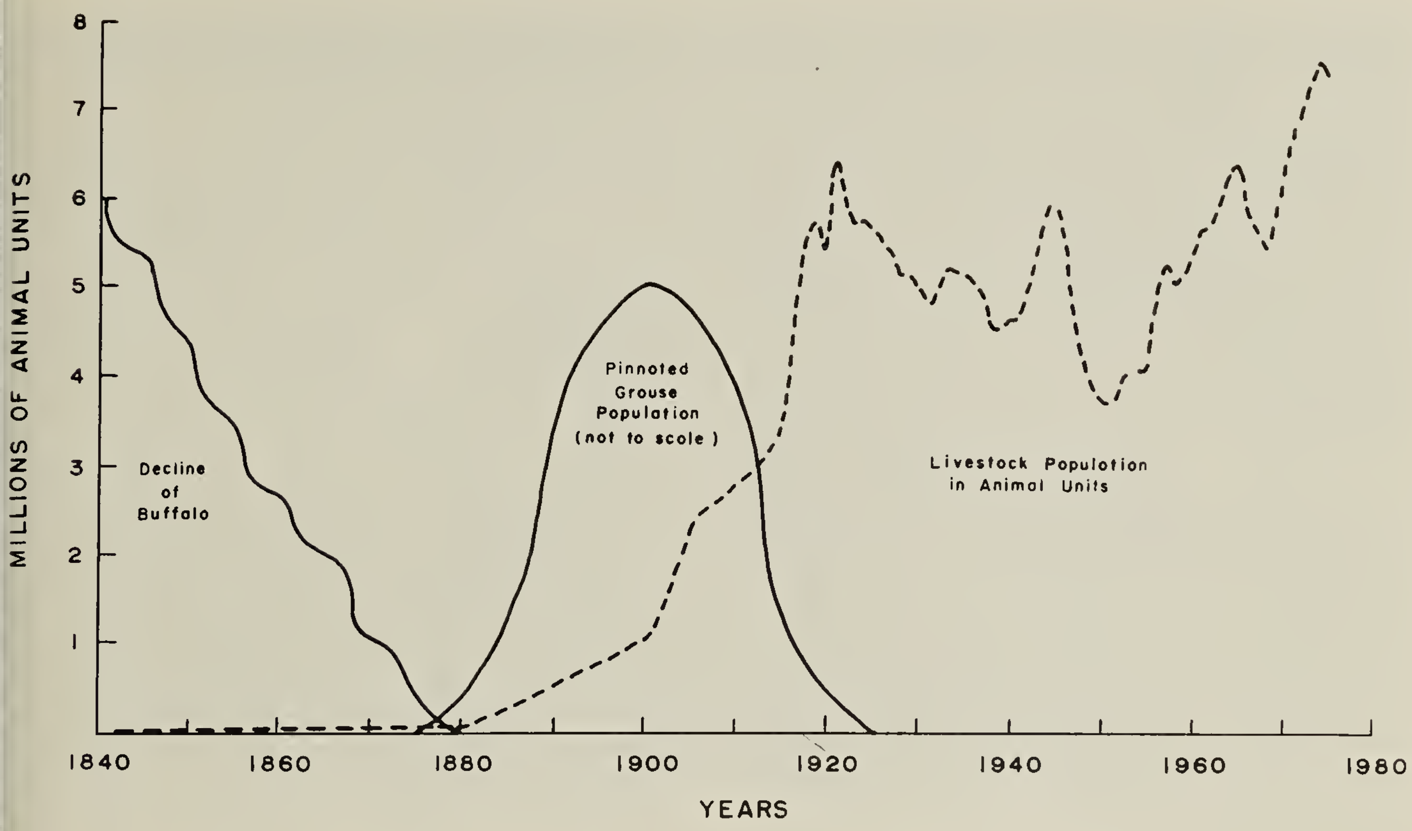

Figure 1. Growth curves to show the decline of the buffalo, the build-up of domestic livestock, and the increase and decline of the Greater Prairie Chicken (Pinnated Grouse). (The last curve is not to scale).

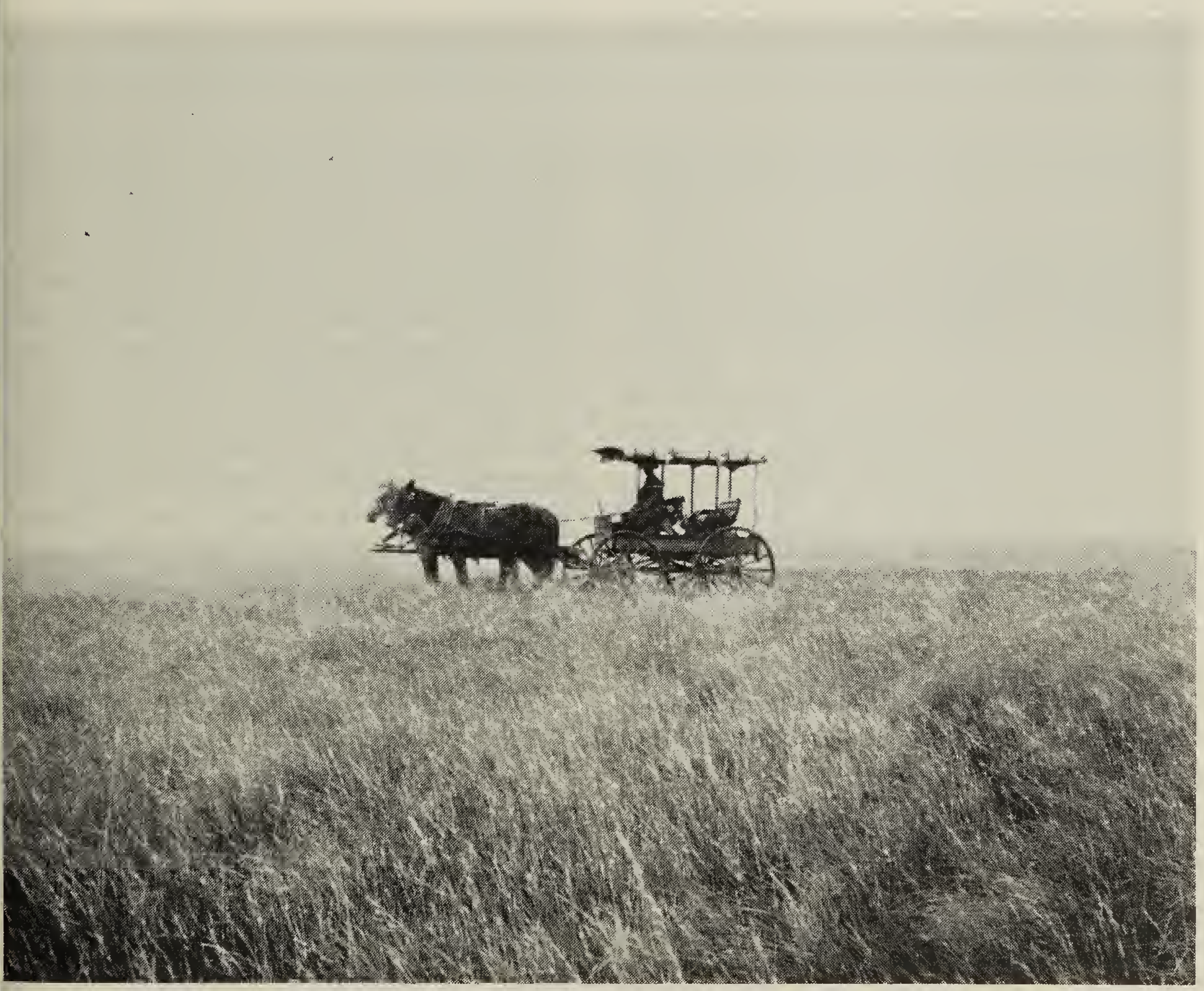

Figure 2. Grassland of southern Alberta about the turn of the century.

and nesting sites and for winter cover and this was provided when grazing by buffalo ceased. Also, the species obtained a considerable amount of its food from cropped fields. Thus, the ungrazed grasses and scattered tracts of cultivation that characterized the western prairies from 1880 to about 1900 provided ideal habitat and the species increased rapidly. However, it was found that the Prairie Chicken would not survive in any area if more than 60% of the grassland was converted to cultivated land.[6] This is what happened in the Prairie Provinces between 1900 and 1920 and resulted in the disappearance of the species.

It is ironic that the Greater Prairie Chicken at first prospered from an expanding agriculture, which made available new resources and led to its establishment in vast regions of the Prairie Provinces. Unfortunately, the further development of cereal farming and cattle ranching eliminated the tall grass vegetation on which the species had depended and led to its disappearance.

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WESTERN KINGBIRD KILLS HOUSE SPARROW

TONY LANG,
65 Bobolink Bay, Regina, Sask.,
S4S 4K2

On May 17, 1976, Eric Lang observed a Western Kingbird kill a House Sparrow in what may have been a territory dispute.

The sparrows, having established a territory on Cardinal Crescent in Regina, were prepared to defend it and did so when a pair of kingbirds arrived. Eric observed the two sparrows pestering the kingbirds in a group of trees and the male sparrow drove one of the kingbirds away. It chased the kingbird for about 300 yards at which point the kingbird wheeled around, seized the sparrow by the neck with its bill and after a short struggle let it fall lifeless to the ground. At that time the kingbird's mate chased the female sparrow away and the territory was theirs. Eric was about to collect the sparrow for examination to determine how it had been killed when a small dog trotted up and collected it for himself.

Bent lists the Western Kingbird as a spirited bird having an intolerance towards intruders on its domain, like the Eastern Kingbird.[1] He also writes of it as slightly more tolerant of large raptors, occasionally living in harmony with Swainson's Hawks, Ballock's Orioles, Mourning Doves, Yellow Warblers and even House Sparrows. Baird et al agree with Bent, describing the species as almost an exact counterpart of the Eastern Kingbird in defence of its nest.[2]

I can only assume that these were the actions of thoroughly fed up kingbirds in an attempt to claim the territory.

[1] A. C. BENT. *Life histories of North American flycatchers, larks, swallows and their allies.* Smithsonian Institute, Washington, D.C.

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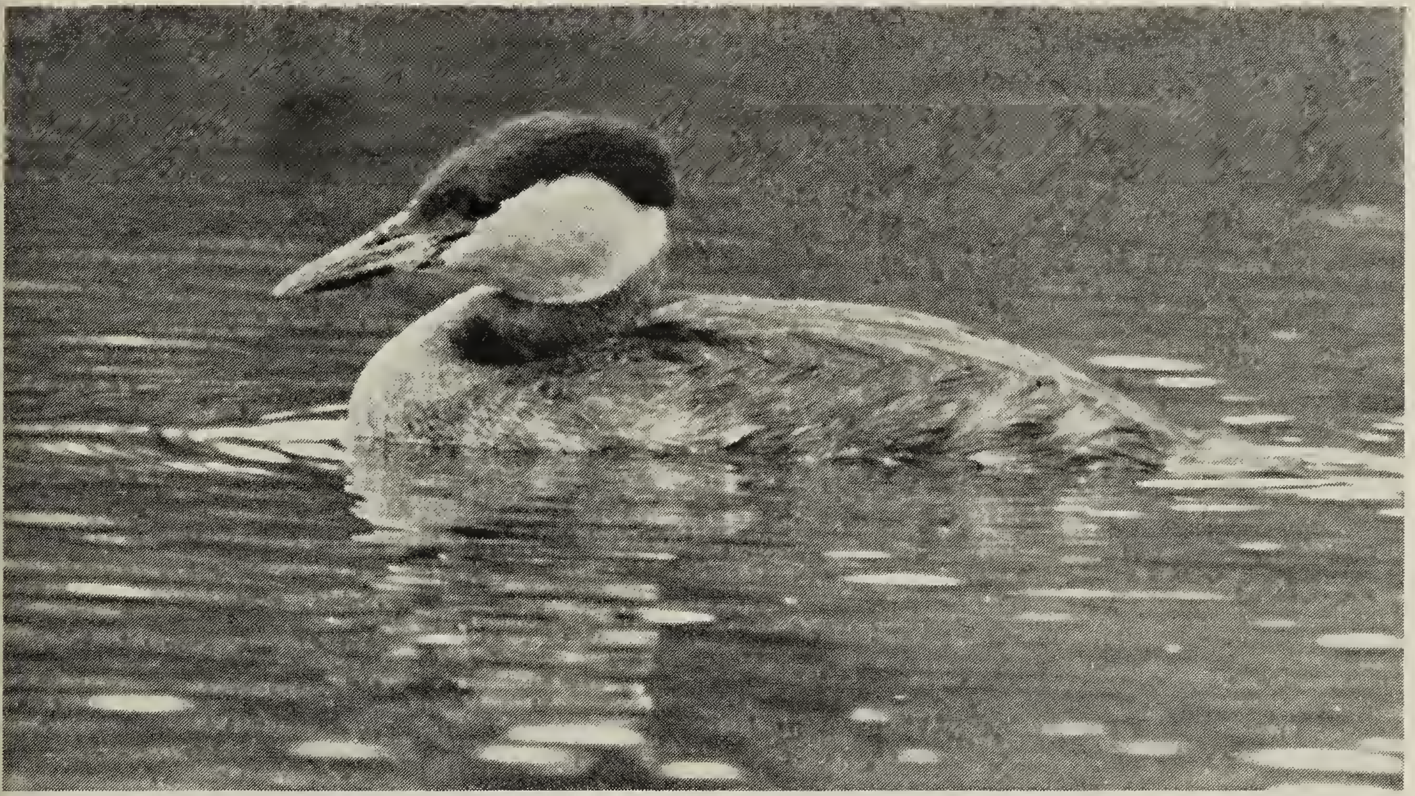

Red-necked Grebe. Larry A. Morgotch

THE BLUE LIST FOR 1976*

ROBERT ARBIB

Once again, in the face of some misconceptions about what the Blue List represents, we repeat an earlier definition. This list is made up of those species which, in all or in significant part of their range, currently exhibit potentially dangerous, apparently non-cyclical population declines. It is not intended to supplement, or to compete with official lists of endangered or threatened species. It should be interpreted as an "early warning" list, and its central purpose is to encourage increased concern and interest in and reporting on the species listed. Some of the species finding their way onto the list *may still be locally or regionally abundant*, but are included because there is enough evidence that in other regions the species are indeed declining.

North America is divided into 23 regions (each with several subregions) for purposes of reporting four times a year to *American Birds*. Most of Alberta, southern Saskatchewan and Manitoba, eastern Montana, North and South Dakota are in the Northern Great Plains Region. The mountainous part of Alberta is in the Northern Rocky Mountain-Intermountain Region. Yukon and the Mackenzie Delta are in the Northwestern Canada Region.

There is no cut-off population point, above which any species may be automatically removed from the list. The Western Grebe may appear in the thousands in winter on Lake Mead, Nev. but elsewhere as a breeding bird in western regions, it is apparently on a downhill track. Critics have held that it is ridiculous to include such abundant, widespread species as Common Nighthawk, Hairy Woodpecker, and Yellow Warbler. How then do we in-

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Adult Swainson's Hawk. Brian W. Johns

dicate that in significant areas of North America, observers are unanimous that these species are in significant declines? We were advised to quietly drop Canvasback, because various governmental agencies were carefully monitoring the population of this game bird and making efforts to manipulate its abundance. But if we omit declining species merely because someone is studying them, our list becomes inaccurate and incomplete. Most species on the list, of course, are nongame birds, and contributors to the Blue List (and all birders) are monitoring these far more closely than any governmental agency.

This year, we have had the biggest response ever to our questionnaire; it comes from *American Birds'* regional editors and subeditors, from expert field observers, and these responses reflect, in many cases, the consensus of large numbers of field observers who contribute regularly to *American Birds*. Far from representing merely the random impressions of random observers, the distilled opinions herewith presented result, then, from the combined and weighed observations of hundreds, if not thousands, of birders in the field tens of thousands of times in 1975. We question whether there are more informed analyses of the status of these species anywhere . . . [Data are given below only for Prairie Province species.]

THE BLUE LIST

1. RED-THROATED LOON. Retained on the basis of a status that is apparently unchanged from that of recent years. Observers on both coasts see no diminished numbers, but opinions in mid-continent are almost unanimous in reporting declines.

2. RED-NECKED GREBE. This year sees a more definite consensus. The species, in the opinion of most field observers reporting, within its range, is on a long, slow decline. Apparently never abundant, the status of the species is now troubling observers from the Hudson-Delaware Region, through Ontario, the Niagara-Champlain, Western Great Lakes, Middle Prairie region, to the Mid-Pacific. There are, however, a few dissenting voices in these same regions.

3. WESTERN GREBE. It may be difficult to understand inclusion of a species which winters in such enormous numbers as this one does at Lake Mead, Nev., but keen-eyed reporters from along the Pacific Coast, the Northern Great Plains, and in Colorado, note declining numbers. Elsewhere, especially in the Southwest, and in Utah, no problem is seen.

4. WHITE PELICAN. Declining populations for this species are noted from the Mountain West, Middle Pacific Coast, Southern Texas, the Great Plains regions, and the Southwest. There is, however, a minority of dissenting voices, from some of these same regions. A problem species: one on which we should have more nesting success data.

5. DOUBLE-CRESTED CORMORANT. One of the more controversial species on the Blue List. Last year opinions were divided 59 to 41 percent for deletion; this year with a much larger response it is 55 to 45 percent in favour of retention. It is difficult in the returns to see specific trends. All reports from the Middlewestern Prairie Region — from Illinois, Iowa, Indiana, Ohio, Kentucky and Missouri, noted declines, as did Ontario, Minnesota, Kansas, and the Pacific Coast. Opinions were divided in the Mountain West and the Southwest. The Atlantic coast regions generally noted no declines. Freshwater cormorants should be suffering the same pesticide problems as the Osprey and Bald Eagle. Marine populations should be less affected.

6. REDDISH EGRET.

7. BLACK-CROWNED NIGHT HERON. There is still disagreement as to the status of this species, although this year the balance has tipped in favor of retention by 57 to 43 percent. Disagreement may be based more on regional verities than differences in observer interpretation. The eastern states seem to predominate in those who find no problems with the species but from Quebec and Ontario through middle North America to the West Coast, and south to South Texas, the heron is believed to be declining.

8. AMERICAN BITTERN. Provisionally added to the list on the recommendation of field observations in the Mountain West (eleven reporters recommend), the Niagara-Champlain Region, the Hudson-Delaware Region, Utah (Bear River), Illinois, and the Southwest. It would be helpful if some meaningful observational statistics were supplied. Several comments were in the vein of D. Kibbe "may be in trouble in the region, but it is too early to say for sure." This is precisely the time when monitoring should begin.

9. WOOD STORK.

10. WHITE-FACED IBIS.

11. WHITE IBIS.

12. FULVOUS TREE DUCK.

13. CANVASBACK. Sixty-two percent of a large cross-section of observers recommend Blue-Listing. The species is being carefully monitored by wildlife professionals, whose estimates are undoubtedly more accurate than ours. But we cannot drop a species obviously belonging on the list merely because its status is now recognized by officialdom. If and when the managing agencies succeed in restoring the species to health, it will happily vanish from out list.

14. SHARP-SHINNED HAWK. There is wide divergence of opinion regarding the well being of this species, and much comment. No less than 64 of our far-flung fact-gatherers favor continued Blue-Listing of the species, which is enough for retention. There is, however, little pattern to the placement of yeas and nays, and we wonder how reliable are observers' views on this species.

15. COOPER'S HAWK. This species received the highest total of votes for inclusion on the list of any species except Osprey, and one of the highest percentages (85%). In the Mountain West, the ratio is 88% to 12%, and in the Rocky-Mountain Intermountain it is 93% to 7%. Nonetheless, there are areas of disagreement (Southwest, California) where the middle Accipiter evidences no problem.

16. RED-SHOULDERED HAWK.

17. SWAINSON'S HAWK. Can be taken verbatim from the 1974 listing: "All western regions see serious declines, while the Midwest and prairie regions see no cause for alarm". In favor of listing overall: 75%.

18. FERRUGINOUS HAWK. "Threatened in southern Idaho, holding its own in east-central Wyoming, declining in Utah, disputed as to status in the Southwest. The consensus, by a considerable margin, is that the species remain on the list, or even be included in the official "Threatened Species" list.

19. HARRIS' HAWK.

Young American Bitterns. Lorne Scott

20. MARSH HAWK. Sixty-eight reporters (68%) favor retention of the Marsh Hawk on this year's list. The sentiment is widespread, with opposing viewpoints coming from Utah, Kansas, the Dakotas, the mountain states, and the Southwest, the latter two areas being rather evenly divided pro and con.

21. OSPREY. Although there are signs here and there that the Osprey may be at least holding its own in scattered centers of breeding, 88% of all respondents gave it the strongest support received by any species for inclusion of the list.

22. CARACARA.

23. PRAIRIE FALCON. With almost 90% of those expressing an opinion about the status of the Prairie Falcon favoring continued listing, there seems no doubt about the status of the species.

24. MERLIN. In spite of reports of an exceptional coastal (New York) fall flight, and evidence at hawkwatch lookouts seeming to indicate at least a stable eastern population, over 91% of all respondents consider the Merlin to fully merit Blue List status. These views are continent-wide.

25. AMERICAN KESTREL. Last year, with a much smaller electorate, retention received 45% of the support; this year, with a far wider survey, support for retention drops to 40%. In large sections of the continent, obviously, the kestrel is in no trouble; of most concern is the Florida-breeding subspecies *paulus*.

26. SAGE GROUSE. No change in status. Approximately 72% of all those expressing viewpoints favored retention . . .

27. MOUNTAIN QUAIL.

28. KING RAIL.

29. AMERICAN OYSTERCATCHER.

30. PIPING PLOVER. If increased support for retention of this species is a bad sign, the Piping Plover could be in trouble. In the last three years, the consensus for inclusion has grown from 69% to 87%. Habitat vulnerability continues to be the problem.

31. SNOWY PLOVER.

32. UPLAND SANDPIPER. Continued on the list. Although its name was inadvertently omitted from the circulated questionnaire, it was a frequent "write-in". In the Mountain West Region, for example, there were 14 retention opinions against a single deletion viewpoint.

33. GULL-BILLED TERN.

34. LEAST TERN.

35. ANCIENT MURRELET.

36. YELLOW-BILLED CUCKOO.

37. BARN OWL.

38. BURROWING OWL. Status unchanged, although this year shows an increase in the percentage of those favoring listing, to 75% of a much wider base. The only areas with recommendations to delete the species were scattered, Florida, one of six, Texas, one of three, the Southwest, two of four and South Dakota, one. In the Mountain West and Northern Rockies area, the pro-retention ratio was 33-5.

39. SHORT-EARED OWL. Added to the list on the basis of recommendations from the Hudson-Delaware, Western Great Lakes (Minnesota, four) Mountain West (fourteen) regions. No comments accompanied any of these recommendations; the population decline may be more widespread than indicated here.

40. COMMON NIGHTHAWK. With 75% of the electorate witnessing no decline in populations, it might be argued that the species should be deleted. But in the Northeast, in Ohio, Wisconsin, Minnesota, the Northern Rockies, and Oregon the opposing viewpoint prevailed, enough to warrant a year's extension on this controversial species.

41. RED-HEADED WOODPECKER. Added to the list with some misgivings, but this species was nominated for inclusion in four regions, including the Hudson-Delaware, Florida, the Middlewestern Prairie and the Southwest. More data are needed.

42. LEWIS' WOODPECKER.

43. HAIRY WOODPECKER. Overall sentiment is against Blue-Listing a species as widespread and apparently common as the Hairy Woodpecker, but we do have 33% of all those who commented, in favor of continued listing. There is no regional pattern to the returns, except the Floridians are unanimous in listing. All others in favor of retention were also east of the Rockies.

44. CLIFF SWALLOW. Tentatively added to the list on the basis of declines detected in the well covered Hudson-Delaware, Mid-Atlantic Coast, and Appalachian Regions.

45. PURPLE MARTIN. Two to one in favor of deletion, but there are enough regional questions about this species to keep it on the list this year. Blue List status for this species should probably be confined to the two coasts.

46. BEWICK'S WREN.

47. FLORIDA SCRUB JAY.

Prairie Falcon and young. Robert J. Long

48. MOUNTAIN BLUEBIRD. Exactly twice as many observers favor deletion as favor retention, but the retention element is strong in some parts of the West, especially the Northwest, in the Rocky Mountain-Intermountain Regions and Nevada.

49. LOGGERHEAD SHRIKE. This is another species about which there is a wide divergence of opinion, with a 60-40 ratio of "retains" to "deletes". Declines are noted throughout the continent east of the Great Plains, except for Florida and Alabama, and in the mountain states. Texas, the Southwest, and the West Coast report no problems.

50. BELL'S VIREO.

51. YELLOW WARBLER. Some respondents commented with some vehemence that this species, still abundant through most of its range, should be deleted, and that its inclusion cast doubts on the credibility of the entire list. How then do we explain away the 29% of those returning opinions that favor this species' retention on the list? Its status is obviously quite diverse from region to region.

52. YELLOW-BREASTED CHAT. Tentatively added to the list on the strength of recommendations from the Hudson-Delaware, Midwestern Prairie (four respondents) and the Rocky Mountain Intermountain regions. More data are needed.

53. LESSER GOLDFINCH.

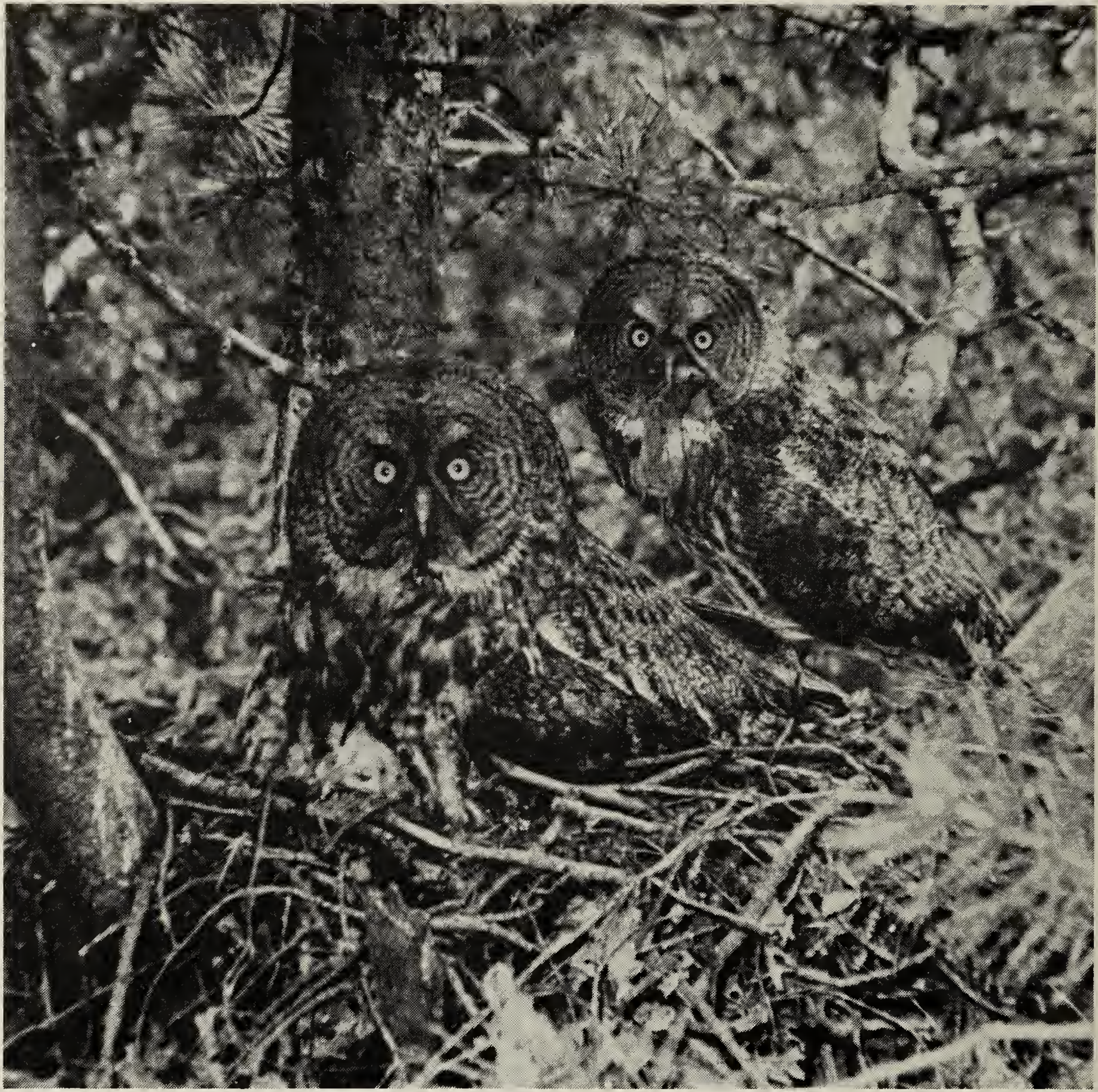
54. GRASSHOPPER SPARROW. Supported for Blue List inclusion by 68% of those reporting.

55. HENSLOW'S SPARROW.

56. BACHMAN'S SPARROW.

Future candidates for the Blue List . . . All these species should be carefully monitored so that valid judgments may be made in forthcoming lists.

Pied-billed Grebe . . . Great Blue Heron . . . Black Duck; Redhead; Turkey Vulture . . . Goshawk; Broad-winged Hawk . . . White-tailed Ptarmingan; Greater Prairie Chicken; Sharp-tailed Grouse . . . Yellow Rail . . . Spotted Sandpiper; Solitary Sandpiper; Long-billed Curlew; Common Tern; Caspian Tern; Mourning Dove . . . Black-billed Cuckoo; Screech Owl; Great Horned Owl; Barred Owl . . . Whip-poor-will; Ruby-throated Hummingbird; Belted Kingfisher . . . Black-backed Three-toed Woodpecker; E. Kingbird; Western Kingbird . . . E. Phoebe; Dusky Flycatcher . . . Brown Creeper; House Wren; Short-billed Marsh Wren; Gray Catbird . . . Veery; E. Bluebird . . . Yellow-throated Vireo; Red-eyed Vireo; Orchard Oriole . . . Bobolink . . . Purple Finch . . . Pine Grosbeak; Lark Bunting; Baird's Sparrow; Vesper Sparrow; Fox Sparrow; McCown's Longspur . . .



Two adult Great Gray Owls at nest. Bob Gehlert

GREAT GRAY OWL AND WHIP-POOR-WILL IN PRINCE ALBERT NATIONAL PARK

DUANE SEPT, 16607-94 Avenue, Edmonton, Alta. T5R 5L4

During the summer of 1975, I conducted a wildlife study for the Canadian Wildlife Service in Prince Albert National Park, Saskatchewan. Observations of two bird species are presented below.

Great Gray Owl: The Great Gray Owl is known to be an uncommon nester in Saskatchewan. To date, only two breeding records have been published. In 1937 an adult with young was located in an old Red-tailed Hawk's nest at the canyon on the Bainbridge River in the Pasquia Forest.[5] The second record was located at Fort a la Corne Game Reserve in May, 1949.[3]

During the summer of 1975, a family of Great Gray Owls was observed on two separate occasions by the author. On both dates, July 24 and August 2, a single adult was observed feeding two fledglings, at Flat Creek, P.A.N.P. Ken Walker, a seasonal park naturalist, accompanied me on August 2. A third owlet may have been present on both occasions, but its presence was not verified. The fledglings were well developed and flew with little difficulty. Flat Creek is located in the southwest corner of the Park. Although the immediate vicinity of the creek is essentially boreal habitat, the area beyond is primarily aspen parkland.

Whip-Poor-Will: The northernmost record for the Whip-poor-will was Round Lake, Saskatchewan (just northwest of Prince Albert) in 1968.[2] During the summer of 1975, the unique song of the Whip-poor-will was heard at three separate locations. Table 1 summarizes all auditory observations.

These observations indicate that the Whip-poor-will is at present distributed as far north as Anglin Lake, P.A.N.P. This data probably represents a current range extension. It seems unlikely that this species has remained in the area undetected by several other investigators over several years (L. N. Carbyn, pers. comm.)

I would like to thank Anne Gunn and L. N. Carbyn for their kind assistance in this project.

TABLE 1
Location of singing Whip-Poor-Wills in the P.A.N.P.

Date	*Location*	*Time*	*Observers**
July 3, 1975	Rabbit Creek Cabin	9:30 p.m.	A. G.
July 5, 1975	Rabbit Creek Cabin	10:00 p.m.	A. G.
July 11, 1975	1.3 miles west of Sugar Creek	10:20 p.m.	A. G., L. C., D. S.
July 12, 1975	1.3 miles west of Sugar Creek	11:00 p.m.	D. S.
July 24, 1975	0.6 mile south of the Anglin Lake Dam	10:15 p.m.	D. S.

*Observers: A. G. (Anne Gunn), L. C. (L. N. Carbyn), D. S. (Duane Sept).

[1] GODFREY, W. E. 1966. *The birds of Canada.* *Queens Printer Canada. 428 p.*

[2] *HOUSTON, M. 1974. Interesting Prince Albert bird records.* Blue Jay 32: 110-112.

[3] LAW, C. 1960. *The Great Gray Owl of the woodlands.* Blue Jay 18: 14-16.

[4] SOPER, J. D., 1952. *The birds of Prince Albert National Park, Saskatchewan.* Wild Mgmt. Bull. Ser. 2, No. 4, Canadian Wildlife Service, Ottawa. 83 p.

[5] SYMONS, R. D. 1967. *Hours and the birds, a Saskatchewan record.* Univ. Toronto Press. 224 p.

GLAUCOUS GULLS AT GARDINER DAM, SASKATCHEWAN

WAYNE RENAUD, 414-44 Eglinton Avenue West, Toronto, Ontario and
BOB GODWIN, 2237 Broadway Avenue, Saskatoon, Saskatchewan

The building of power generating stations in Saskatchewan has made areas of open water available to birds in winter. Christmas Bird Counts have been conducted at the hydroelectric development at Gardiner Dam near Cutbank in 3 of the last 4 years. In 1975 the count was made by Don Renaud and ourselves on December 22.

At 1:50 p.m. we were about 3/4 mile north of the generator when a large gull flew towards us. It passed within 100 yards and continued flying downstream. Its large size and very pale plumage immediately led W. Renaud to conclude that the bird was a Glaucous Gull. He was thoroughly familiar with this species having seen it often during July and August, 1975, in the central Arctic islands.

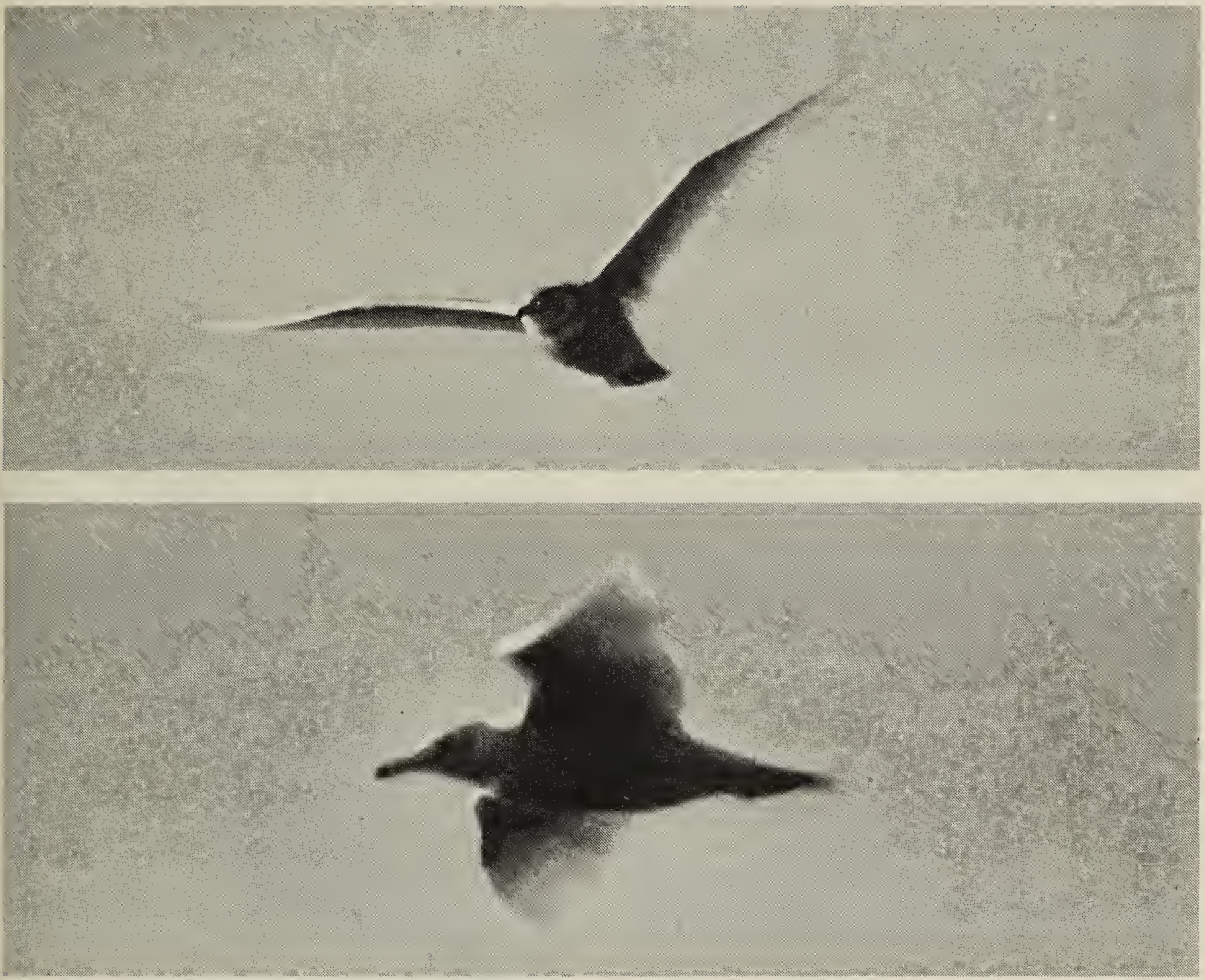
The bird was obviously an immature in second winter plumage. We could clearly see the light-coloured legs, the very pale mantle which included the primaries and secondaries, and the flesh-coloured bill with a black tip. During the next 20 minutes the gull flew leisurely downstream for approximately 1 mile and returned. On its second pass, it again came within 100 yards and continued up the river. A few minutes later it turned and flew downstream along the center of the river. During this time we were able to compare the field marks with those of the immature Glaucous Gull as illustrated in Robbins *et al.*[5]

We next located the gull about 3 miles downstream from the outlet. It stood on the shore for about 10 minutes, then flew upstream and passed within 30 feet of Godwin who took three photographs. Again the light was excellent and all field marks noted previously, plus the yellow iris, were viewed through 7 x 50 and 10 x 50 binoculars. What was assumed to be the same gull was last seen at approximately 3:30 p.m. about 1-1/2 miles downstream from the outlet.

Within 5 minutes of leaving the generator outlet, we found two gulls standing on the ice beside a whirlpool created by the generator intake above the dam. Because of the unsafe ice, we were unable to approach closer than 500 yards; but with the aid of binoculars we were able to see the very pale plumage of these birds. For 5 minutes we watched the gulls as they walked along the ice and swam for short distances. Twice one of the gulls raised its wings and revealed the white primaries and mantle. As with the first bird observed, the two gulls appeared to be Glaucous Gulls in second-year plumage.

The dam was visited on several occasions during January and February by Wayne Harris, Bob Godwin, Kim Godwin, Dale Hjertaas, Sheila Lamont, and Kathy Meeres but the gulls were not seen again.

This was the fifth occurrence of Glaucous Gulls in Saskatchewan. Single immatures were seen at Lorado on the north shore of Lake Athabasca on 25 May and 13 June 1960; the latter was collected for the first provincial specimen.[3] Another, presumably an immature, was seen near the settlement of Wollaston Lake in northeastern Saskatchewan on 27 May 1964.[4] Two first-year birds were seen at Prince Albert on 23 October 1969;



Glaucous Gull at Gardiner Dam. Bob Godwin

one was collected the following day and the other remained until 29 October.[2]

The occurrences of Glaucous Gulls at Gardiner Dam represents the first winter record for Saskatchewan. The regular winter range of this arctic breeding species includes Hudson's Bay and the Great Lakes.[1] The occurrence of Glaucous Gulls in Saskatchewan in mid-winter may, therefore, not be that unusual. The fact that no gulls were seen in the area during later visits does not necessarily indicate that the gulls had left the river. On December 22 the South Saskatchewan River was continuously open for at least 10 miles below Gardiner Dam and intermittently for at least another 100 miles. Mild temperatures continued for most of the winter.

The continued construction of other power generating structures (e.g. Poplar River) will provide additional opportunities to see species such as the Glaucous Gull which may occur only rarely in the province at any time of the year.

Our thanks go to George Alliston, Wayne Harris and Marg McLaren who kindly read early drafts of this report.

[1] GODFREY, E. W. 1966. *The birds of Canada.* Nat. Mus. Canada Bulletin No. 203. Queen's Printer, Ottawa. 428 pp.

[2] HOUSTON, M. I. 1974. *Interesting Prince Albert bird records.* Blue Jay 32(2): 110-112.

[3] NERO, R. W. 1963. *Birds of the Lake Athabasca region, Saskatchewan.* Sask. Nat. Hist. Soc. Spec. Pub. 5. 143 pp.

[4] NERO, R. W. 1967. *Birds of Northeastern Saskatchewan.* Sask. Nat. Hist. Soc. Spec. Pub. 6. 96 pp.

[5] ROBBINS, C. S., BERTEL BRUUN and H. S. ZIMM. 1966. *Birds of North America.* Western Publishing Co., Racine, Wisconsin. 340 pp.

PRELIMINARY INVESTIGATION OF THE BIRDS OF PAKOWKI LAKE, ALBERTA

W. W. SMITH and C. A. WALLIS, 8220 Elbow Drive, Calgary, Alberta

Pakowki Lake is a large, shallow body of water located 45 miles south of Medicine Hat in southeastern Alberta. It is 15 miles long and covers approximately 30 square miles, making it one of the largest lakes in the Mixed Grassland region of Alberta. In the broad northern portion of the lake there are numerous islands, ranging from a few acres to 3 square miles in area. The extensive marshes and numerous nesting islands present at Pakowki Lake are scarce habitats elsewhere in southeastern Alberta. It is, therefore, surprising that the lake has received very little attention from biological researchers.

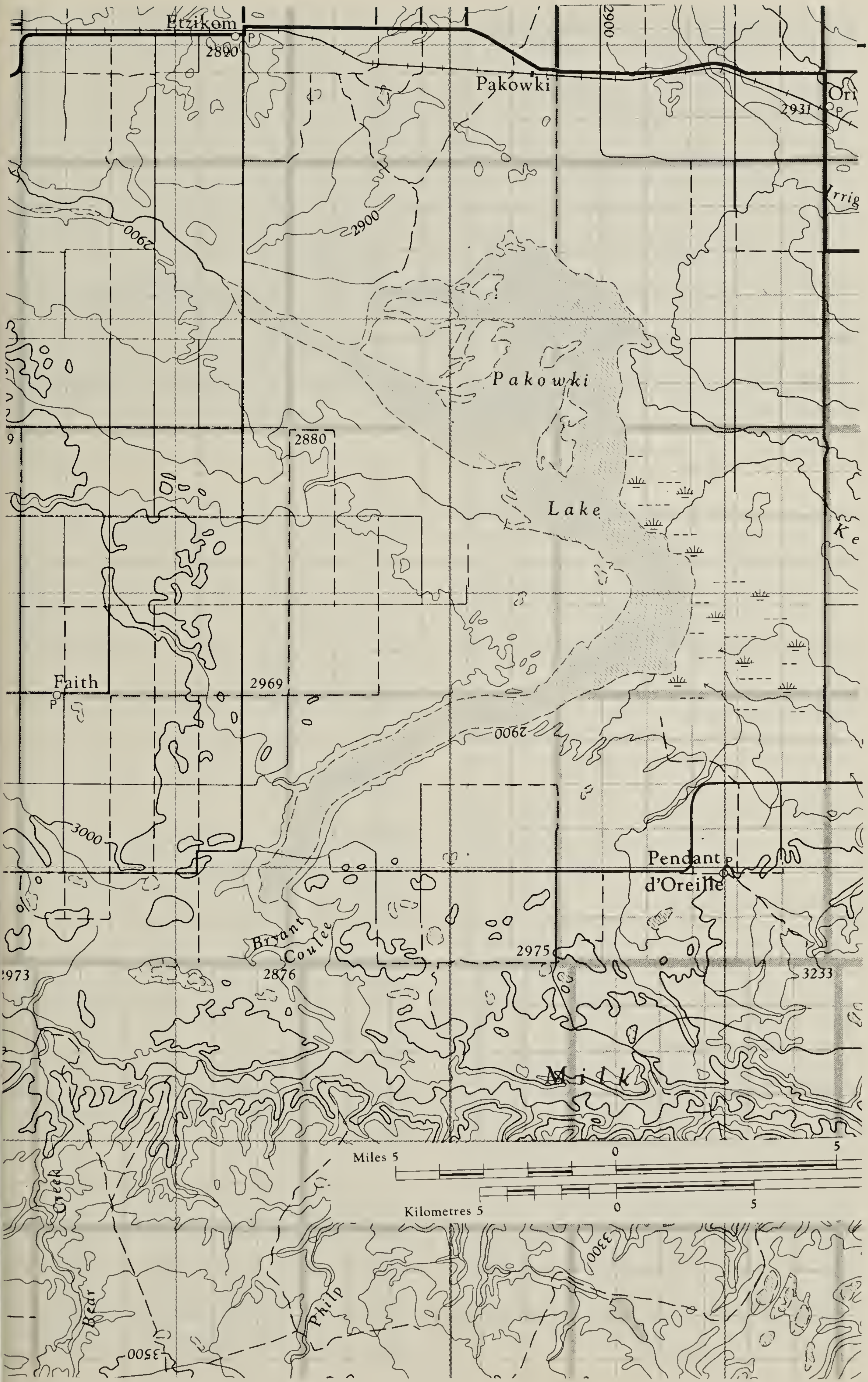
During 1975, we visited Pakowki Lake on July 1 and 24. Our observations were confined mainly to the northwestern arm of of the lake. This portion and the couleee which drains into it contain an extensive marsh (Fig. 1) dominated by bulrushes (*Scirpus* spp.) in the deeper waters and by sedges (*Carex* spp.) and rushes (*Juncus* spp.) in shallower water. The submergent vegetation of the open water surrounding the islands is comprised largely of pondweeds (*Potamogeton* spp.). Some of the more common breeding birds include: Eared Grebe, Blue-winged Teal, Pintail, Mallard, Lesser Scaup, Northern Shoveler, American Coot, Wilson's Phalarope, Common Yellowthroat, Red-winged Blackbird and Yellow-headed Blackbird. A large portion of the land surrounding this part of the lake is uncultivated and is used for grazing cattle.

Of the 57 bird species observed at Pakowki Lake, the following records are the most noteworthy, all representing range extensions of the ranges documented by Salt and Wilk.[1] For the most part, these do not reflect recent movements of these species into the area but indicate a lack of published data.

Double-crested Cormorant.
Fred Lahrman

Western Grebe: More than 12 birds were observed in the extensive beds of sedges along the northwestern shore. It is quite possible that more intensive searching will reveal that this species nests here. This lake is one of few such places in southern Alberta where Western Grebes occur in summer.

Pied-billed Grebe: At least eight were sighted or heard throughout the marshes. It is likely that this grebe also nests here. Pakowki Lake is one of a limited number of southern Alberta localities where Pied-billed Grebes occur during the nesting season.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Five White-faced Ibis in silhouette. C. Wallis

Double-crested Cormorant: Six were observed on July 1, while over 20 were seen July 24. There are several large islands towards the center of the lake that may support a nesting colony.

Black-crowned Night Heron: More than 75 (both adults and immatures) were observed in the extensive bulrush marshes, and many nests were located. This appears to be one of the larger nesting colonies of night herons in Alberta.

American Bittern: At least six were sighted or heard, indicating a substantial population in the marsh system.

White-faced Ibis: On July 1, 7 adults of this species were observed in the bulrush marshes. From the behavior of 5 birds, (Fig. 2), it appears probable that this species was nesting. On July 24 a total of 11 adults was observed. The first authentic record of this species in Alberta is of a single bird seen by D. Stirling in the same area on June 11, 1974 (W. R. Salt, personal communication). Further documentation of this species at Pakowki Lake will be forthcoming at the end of the 1976 nesting season.

Redhead and **Canvasback**: Moderate numbers of both species were sighted, indicating that Pakowki Lake is a breeding area. This would be the southernmost in Alberta. It may also be used for moulting.

California and **Ring-billed Gulls**: A small colony containing nests of both species was found on a small, rocky island in the lake. As the young were out of the nest on July 1, it was impossible to determine the number of nests; however, it appears to be somewhere between 40 and 80.

Franklin's Gull: Numerous birds of this species were seen, including young of the year. The nesting colony is in the bulrush marsh and is the southernmost in Alberta.

Forster's Tern: On July 1, two birds were sighted, one of which was an immature. It seems likely that nesting occurred at Pakowki Lake; one of few such areas in the province.

Common Tern: A small colony was located at the edge of an island where California and Ring-billed Gulls were also nesting.

Long-billed Marsh Wren: This species was fairly common in the bulrush marsh, where nesting was confirmed. This is one of few nesting localities in southern Alberta.

Pakowki Lake was established as a Migratory Bird Sanctuary in June, 1920. As early as 1925 it was recommended that its sanctuary status be removed, but fortunately this never occurred. However, as recently as 1973, the Canadian Wildlife Service has stated that Pakowki and other water bodies in Alberta, are no longer valuable as bird sanctuaries. *This view is based on sketchy data and, in our opinion, reflects a lack of understanding and research into the dynamics or aquatic habitats in the grassland region.*

From published information and conversations with local residents, it appears that Pakowki Lake dries up completely perhaps as much as 50% of the time.[2] However, there are usually some remnants of aquatic habitats even in the driest years. The high capability of the lake during periods of high water levels appears to offset the non-productive dry years. It seems likely that the bird life of this and similar areas has adapted to the dramatic fluctuations in the water levels.

Further diking of fields which keeps spring melt water from entering the normal drainage channels that feed the lake, and the diversion of the inflowing water for irrigation are real dangers to the water regime of Pakowki Lake. It is our wish that this preliminary report will draw attention to the significance of Pakowki Lake and to ensure its further protection as a sanctuary. In addition, it is hoped that this will stimulate other investigations into the bird life of other large water bodies in the grassland region, especially those which are threatened with loss of sanctuary status or facing disruption through recreational or agricultural activities.

Pakowki Lake is an area that contains a great deal of interest for naturalists, and is well worth a visit. The authors would greatly appreciate and duly acknowledge, any observations concerning the natural history of Pakowki Lake. This, along with more intensive field study, will enable us to present a more complete picture of the natural history of the area.

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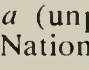
[1] SALT, W. R. and A. L. WILK 1966. *The Birds of Alberta* (second edition). Queen's Printer, Edmonton.

[2] SOPER, J. D. 1939. *Report on Pakowki Lake Bird Sanctuary, Alberta* (unpublished). Dept. of Mines and Res., National Parks Bureau, Ottawa.



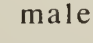
A JULY DAY AT LAST MOUNTAIN LAKE

KEN LUMBIS, 1008 - 3rd Street, Saskatoon, Saskatchewan and BOB GODWIN, 2237 Broadway Avenue, Saskatoon, Saskatchewan.

This is a list of 82 species of birds observed in 7 hours on July 2, 1976, at the north end and northwest side of Last Mountain Lake, east of Simpson, Saskatchewan. Kathy Meeres, Kim Godwin and the authors visited the fingers, Etter's Beach, the Headquarters area, Basin A, Sailor's Bay and several farmyards between 11:30 a.m. and 6:30 p.m. It rained in the morning, there was scattered cloud in the afternoon, a light breeze and it was about 15°C.

Two Red-necked Grebes, 2 Horned Grebes, 5 Pied-billed Grebes, 2 pairs with 1 young each of Western Grebes, 4 White Pelicans, 4 Double-crested Cormorants, 1 Great Blue Heron, 1 Black-crowned Night Heron, 6 American Bitterns, many Mallards, several Gadwalls, many Pintails, several Green-winged Teal, many Blue-winged Teal, many American Wigeon, many Northern Shovelers, several, mostly male, Redheads, 1 Ring-necked Duck, several, mostly male, Canvasbacks, many Lesser Scaup, 3 Buffleheads, several White-winged Scoters, many Ruddy Ducks, 2 Swainson's Hawks, 1 Marsh Hawk, several Soras, many American Coots, many Killdeer, 3 Upland Plovers, 2 Solitary Sandpipers, many Willets, several Greater Yellowlegs, many Lesser Yellowlegs, 1 Least Sandpiper, 12 Dowitchers, several Marbled Godwits, 2 American Avocets, 2 male Wilson's Phalaropes, 1 California Gull, 2 Ring-billed Gulls, 5 Franklin's Gulls, many Forster's Terns, many Common Terns, many Black Terns, many Rock Doves, several Mourning Doves, 1 Black-billed Cuckoo, 1 Short-eared Owl, 1 Common Flicker.

Many Eastern Kingbirds, 3 plus 1 pair nesting Western Kingbirds, many Horned Larks, 2 Tree Swallows, 4 Bank Swallows, at least 2 pairs nesting Barn Swallows, many Black-billed Magpies, many Crows, 3 plus 1 pair of nesting House Wrens, 1 Short-billed Marsh Wren, 3 Brown Thrashers, 1 Sprague's Pipit, several Loggerhead Shrikes, several Yellow Warblers, 3 Common Yellowthroats, many House Sparrows, 1 male Boblink, many Western Meadowlarks, many Yellow-headed Blackbirds, many Red-winged Blackbirds, many Brewer's Blackbirds, many Common Grackles, many Brown-headed Cowbirds, several American Goldfinches, many Savannah Sparrows, 1 Grasshopper Sparrow, several Baird's Sparrows, 3 Sharp-tailed Sparrows, many Vesper Sparrows, 2 Chipping Sparrows, many clay-coloured Sparrows, many Song Sparrows, 1 male Chestnut-collared Longspur.



BIRD NOTES ON THE CYPRESS HILLS SUMMER MEETING

JIM A. WEDGWOOD (Compiler), 610 Leslie Ave., Saskatoon, Sask.

The Society held its 1976 Summer Meet at Cypress Hills Provincial Park from June 11 to 13. Notes on some of the more significant bird observations in the Cypress Hills district are presented. (A write-up on the activities and about the large turn-out of members and friends will no doubt appear in the Newsletter).

The notes were compiled from records kept by Wayne Harris and Sheila Lamont, Prince Albert, and Jim Wedgwood, Saskatoon. Ross Lein, Calgary, Frank Brazier and Lorne Scott, Regina, and Ole Nielsen, our President, also contributed. The observations were made on the scheduled field trips and also at other times during the weekend or while on our way to or from the Summer Meet. Except where otherwise stated, the notes pertain to the Centre and West Blocks and The Gap between them.

Eight birds were recorded whose breeding ranges are not shown by Godfrey in *The Birds of Canada* as including the Cypress Hills: Common Loon, Cooper's Hawk, Broad-winged Hawk, Yellow-bellied Sapsucker, Purple Martin, Ruby-crowned Kinglet, Tennessee Warbler and Western Tanager. Indications were that the buteo, kinglet and tanager were likely nesting — the first as evidenced by behaviour, the second by numbers and the third by nest building.

The Broad-winged Hawk was heard giving its territorial scream or was seen by three members at different times in the vicinity of the Valley of the Beavers Nature Trail in the southeast part of the Park with its pure and mixed stands of lodgepole pine, white spruce and poplar.

Ruby-crowned Kinglets were heard in three places, all in spruce woods, and two were heard beside Loch Lomond, which is spruce and spruce-pine fringed. Both Harris and I noted a slight difference between the typical song of these birds and that of the kinglets found in northern boreal forest. Harris wonders if they are a different subspecies.

I saw a male singing Western Tanager beside Lonepine Creek along the Valley of the Beavers Nature Trail where Lein later saw a pair with the female carrying nest material. Scott found a nest under construction by what may have been the same pair. Harris heard two singing males along the Trail. Lein saw another male at Fort Walsh, beside Battle Creek. Both locales were in spruce woods bordering the streams. Harris also saw and heard this species in the Terrace Campground. Thus a total of four and, possibly, five territorial males were recorded.

The other five species, not confirmed breeders in the Cypress Hills, were single observations. Harris heard a Common Loon on several occasions in the Loch Leven area, saw a female Cooper's Hawk circling over the north slope near Bald Butte, and saw a Yellow-bellied Sapsucker near Loch Leven. I saw a lone Purple Martin flying over the private cottage area. Harris saw a singing male Tennessee Warbler along Lonepine Creek.

I hope some day someone will take the time to prove out the breeding or otherwise of these species.

Some other notes of interest: Two groups of Society members returning from the field trip to Fort Walsh were treated to the sight of a pair of Turkey Vultures in courtship flight over The Gap near Six-mile Creek. Two adult Golden Eagles were also soaring in this vicinity.

Adams Lake, Cypress Hills, Sask. J. D. Hogg

For years a pair of the rare Trumpeter Swans have nested on Adams Lake at the foot of the conglomerate cliffs in the West Block. According to the Park Naturalist they were not nesting there this year, but rather on another lake nearby. However, on the Saturday Society groups saw a bird on Adams Lake and on the Sunday Nielsen and I saw two there. It could not be concluded they were nesting as both birds were on the water at the time.

Most Saskatchewan bird watchers consider the Dusky Flycatcher to be a rarity. Godfrey includes only the Cypress Hills from this province in the breeding range. However Brazier, Harris and Wedgwood between them found a total of six males and one female. One was within 50 yards of the government cabins where many Society members stayed during the Summer Meet, another was near the Administration Building and others were on the Valley of the Beavers Nature Trail. Considering the limited time available for concentrated search, it could be assumed that more extensive hunting would have easily turned up more of the species, and the Dusky Flycatcher could well be common in the Hills.

While observing the Dusky, I accidentally scared up a second flycatcher. That it hung around in a state of agitation was taken as a sign it was the female near its nest. Also, while it was agitated, the male moved from perch to perch and varied the singing cadence, returning to the original snag and cadence only when I moved to another location. The literature notes that the color of this bird's belly plumage is variable (Godfrey). This was certainly the case with the pair seen. The male's belly was a dirty grey, the female's belly was yellow. The site, a small coulee, was a partially open area in mature mixed woods with

Female Wilson's Phalarope. Doug Gilroy

much understory brush and some standing dead snags.

Harris saw at least 50 White Pelicans and 500 Double-crested Cormorants on an island in Cypress Lake, a long-time breeding site for these birds. Three Ferruginous Hawks and two pairs of Rough-winged Swallows were also noted in the vicinity.

In the flat country north of the West Block, Nielsen and I saw a Red-tailed Hawk carrying something and being chased by two Long-billed Curlews. As the three birds angled over the adjoining field, a second pair of curlews joined the chase. A moment later yet another pair rose from a third field over which the hawk was flying. At the same time a single curlew came from a further field and joined the melee. Seven curlews were in the air at once. It is highly likely that if it hadn't been for the hawk we would have driven by without seeing a single curlew, which suggests that the curlew may be more common than one usually imagines.

Other comment: The trip from the Provincial Park in the Centre Block to Fort Walsh in the West Block provided members with a classic illustration of the relation between species and habitat. One drives through three large basic habitat types (plus smaller habitat gradations, edges and local areas): first the coniferous forest of the higher plateau, second the park-like slopes and open areas of the plateau with cinquefoil shrub and aspen, third the mixed grass prairie of the lower rolling land in the gap between the two blocks. A distinct change in birds was obvious as one moved from one region to another. The Oregon Junco (Dark-eyed) and Audubon's Warbler were typical of the forest areas and could be heard "everywhere". The Savannah Sparrow, Least Flycatcher and White-crowned Sparrow were typical birds in the parklands while Sprague's Pipit and Baird's Sparrow were the most frequently heard species in the grassland. All this in addition to the wonderful scenery.

The Valley of the Beavers Nature Trail is surely one of the best in the province for variety of birds during the nesting season and especially for species not ordinarily found in Saskatchewan. From one spot it is possible to hear three of the small, difficult-to-identify-by-sight *Empidonax* flycatchers — Alder, Least and Dusky. At one time one can hear three thrushes — Robin, Veery and Swainson's Thrush — and in a hundred-yard stretch see or hear eight warblers — Tennessee, Orange-crowned, Yellowthroat, Redstart, Oven bird, Yellow and the strictly local Audubon's (Yellow-rumped) and MacGillivray's. Throw in nesting White-crowned Sparrows for good measure.

Now available to visitors to the Park is a booklet, *The Cypress Hills, a Natural History*, written by Helen Morrison of Regina and published by the Saskatchewan Museum of Natural History. It gives an outline of the geological, human and geographic history of the Cypress Hills region, describes the flora and fauna, and includes check lists of the mammals, butterflies, birds and common plants. The bird list is based on Godfrey's *Birds of Canada*. Such a booklet is a good step forward.

Species Abundance: A total of 110 species were reported in the Cypress Hills district — from Maple Creek south to Cypress Lake and from Highway 21 and Belanger Creek west to the Alberta border. Birds recorded only outside of the Centre and West Blocks and The Gap are designated (d). The coverage was probably sufficient to provide a reasonably reliable impression of abundance for some species. In these instances the notations in the list are: U - Uncommon, less than 5 individuals counted in the 3 days; C - Common, 5-10 individuals; VC - Very common, more than 10 individuals.

Willet. Gary Anweiler

Common Loon/U, Horned Grebe/U, White Pelican (d)/VC, Double-crested Cormorant/VC, Great Blue Heron, Trumpeter Swan/U, Canada Goose, Mallard/VC, Gadwall/C, Pintail/C, Green-winged Teal/U, Blue-winged Teal/VC, American Wigeon/C, Northern Shoveler/C, Lesser Scaup/U, Turkey Vulture, Cooper's Hawk, Red-tailed Hawk (d), Broad-winged Hawk, Swainson's Hawk/U, Ferruginous Hawk (d)/U, Golden Eagle/U, Marsh Hawk/U, Ruffed Grouse, Sharp-tailed Grouse, Ring-necked Pheasant (d), Hungarian Partridge (d), Sora, American Coot/U, Killdeer/VC, Common Snipe/C, Long-billed Curlew (d), Upland Sandpiper/U, Spotted Sandpiper/U, Willet/C, Lesser Yellowlegs, Marbled Godwit/C, Wilson's Phalarope/C, California Gull, Ring-billed Gull/C, Rock Dove (d)/U, Mourning Dove/C, Great Horned Owl, Short-eared Owl (d), Common Nighthawk, Belted Kingfish/U, Yellow-shafted (Common) Flicker/U, Hairy Woodpecker, Yellow-bellied Sapsucker.

Eastern Kingbird/VC, Western Kingbird/U, Alder Flycatcher/U, Least Flycatcher/C, Dusky Flycatcher/C, Western Wood Pewee, Horned Lark/VC, Tree Swallow/U, Bank Swallow/VC, Rough-winged Swallow (d), Barn Swallow/C, Cliff Swallow (d), VC, Purple Martin, Black-billed Magpie/C, Common Crow/C, Black-capped Chickadee/U, Red-breasted Nuthatch/VC, House Wren/U, Robin/VC, Swainson's Thrush/U, Verry/C, Moutain Bluebird/U, Ruby-crowned Kinglet/U, Sprague's Pipit/VC, Cedar Waxwing/C, Starling, Red-eyed Vireo, Warbling Vireo, Tennessee Warbler, Orange-crowned Warbler, Yellow Warbler/U, Audubon's (Yellow-rumped) Warbler/C, Ovenbird/U.

MacGillivray's Warbler/VC, Common Yellowthroat/VC, American Redstart/U, House Sparrrow, Bobolink (d), Western Meadowlark/VC, Yellow-head Blackbird, Red-winged Blackbird/VC, Baltimore (Northern) Oriole, Brewer's Blackbird/C, Common Grackle (d)/U, Brown-headed Cowbird/VC, Western Tanager/U, Pine Siskin, American Goldfinch/C, Red Crossbill, Rufous-sided Towhee/C, Lark Bunting/VC, Savannah Sparrow/VC, Grasshopper Sparrow (d), Baird's Sparrow/VC, Vesper Sparrow/VC, Oregon (Dark-eyed) Junco/VC, Chipping Sparrow/U, Clay-colored Sparrow/C, White-crowned Sparrow/C, Song Sparrow/C, Chestnut-collared Longspur/VC.

ADDITIONAL BIRD AND MAMMAL OBSERVATIONS IN THE CARIBOU MOUNTAINS, ALBERTA

E. OTTO HOHN, Department of Physiology, University of Alberta,
Edmonton, Alberta

In continuation of field work, previously reported in the *Blue Jay* (1975, 33:73-83 and 34:56-58), I revisited the area about the eastern quarter of Margaret Lake and Eva Lake with Mr. D. Ellis for 5 days, June 27 to July 1, and again with my son, H. Hohn, on July 12 and 13, 1976. This year, because no float plane was available, only Margaret Lake, where there is an air strip, was accessible. Three sight records of quite unmistakeable species given to me by Mr. L. Wilson, part-owner of the Margaret Lake fishing lodge and designated L. W., are included.

BIRDS

New breeding records and species not recorded previously:

Red-throated Loon: After unsuccessful efforts during three successive breeding seasons, a nest with one egg was found on a lakelet about a mile north of Margaret Lake on June 28. On the preceding day two of these loons were seen near a still empty nest on a small lake by the mouth of the creek which drains Rock Island into Margaret Lake, where a pair was seen in June and July, 1975. On July 1 this nest was still empty but one of the birds, when attempting to fly off with its mate, could not get fully airborne and was perhaps carrying a fully formed egg. Further details are being submitted to the Canadian Field-Naturalist.

Arctic Loon: On July 1 two, frequently calling, were in view for about 20 minutes in a bay of Margaret Lake. I found a pair of these loons with young in northeastern Alberta about one mile from Margaret Lake (Hohn, Can. Field-Naturalist 1972, 86: 372.

Whistling Swan: About 500 on Margaret Lake on May 25, 1976; they had left by the next day. L. W.

Canada Goose: A large flock on Margaret Lake, May 26, 1976, which also stayed less than 24 hours. L. W.

Blue-winged Teal: A female was flushed from cover along the small lake near the mouth of Rock Lake-Margaret Lake Creek, June 27.

Green-winged Teal: A female with nine downies on a small lake between Margaret and Eva Lakes, July 1.

Parasitic Jaeger: On the evening of June 29 one passed over Margaret Lake on an easterly course harrying a common tern for about half a minute. These jaegers are known to summer but are not known to breed on Lake Athabasca, about 200 miles east of Margaret Lake.

Fox Sparrow: One in song, June 27, near the mouth of the creek from Rock Island Lake in Margaret Lake; another was seen very briefly July 12 near the eastern extremity of Margaret Lake.

General Notes

Greater Scaup: (?) I was unable to collect the hen flushed from a scaup nest with eight eggs, July 1, on a small lake between Margaret and Eva Lakes. Again the measurements of two eggs taken from it suggest Greater rather than Lesser scaup but do not permit a definite conclusion.

Osprey: Two seen July 12 circling and uttering piping calls over a lake about a mile long between Margaret and Eva Lakes; may have had young nearby.

Canada Goose with brood. Gary W. Seib

Lesser Yellowlegs: One was flushed from a nest with four eggs beside a seismic trail about a mile north of Margaret Lake, June 28.

Mew Gull: Two apparent pairs dived at us repeatedly with continuous calls at a small lake about a mile from Margaret Lake, June 28. Their behaviour strongly suggested that they had nests or young nearby but neither could be found.

Gray-cheeked Thrush: Several heard in song about Margaret Lake in late June.

Yellow-rumped Warbler: A nest containing several young found June 25 was empty when we rechecked on July 12.

Northern Waterthrush: A singing male a few miles northwest of the Margaret Lake fishing lodge, July 1, is the second local observation of this species.

MAMMALS

American Black Bear: Evidently not quite as scarce as indicated by the experience of Mr. G. Grimm (*Blue Jay* 1975, 33:82) for on June 21, 1975, we saw the corpse of a subadult which had been shot near the Margaret Lake fishing lodge, while this year Mr. and Mrs. Wilson encountered one swimming well out on the lake on June 26.

Flying Squirrel. Hans Dommasch

RANGE EXTENSIONS FOR FOUR SMALL MAMMALS IN ALBERTA*

HUGH C. SMITH and ROD D. BURNS,
Provincial Museum of Alberta, Edmonton. T5N 0M6

The Provincial Museum of Alberta conducted mammal surveys in eastern and central Alberta during the summer of 1975. A series of small mammals was obtained that expands our knowledge of their distribution in the province.

One survey was conducted along the Alberta-Saskatchewan border from Paradise Valley (Tp47 R2 W4) to Cadogan (Tp37 R3 W4), Alberta, from August 6 to 15. This area is included in Rowe's Aspen Grove section of the Boreal Forest Region.[4] Other surveys were made in the Hand Hills area (Tp29 R17 W4) from August 21 to 26 and in the Wintering Hills area (Tp26 R18 W4) of central Alberta from September 24 to 27. These two areas are included in the Grassland Region.[4] Specimens of Arctic Shrew (*Sorex arcticus*), Wandering Shrew (*Sorex vagrans*), and Gapper's Red-backed Vole (*Clethrionomys gapperi*) were collected that either extend the range of these mammals or are new locality records for the species.

Arctic Shrew: In a recent review of the distribution of shrews in Alberta, Salt outlined the range of *Sorex arcticus* as north of the Battle River in eastern Alberta and north of the North Saskatchewan River in western Alberta.[5] It is considered to be a characteristic mammal of the Boreal Forest Zone although Banfield suggests "that it may be . . . typical of the subclimax or transitional vegetation stages."[3 6 1] During our survey two Arctic Shrews were trapped, one in what may be termed "typical" habitat, the other in "atypical" habitat. The first, trapped August 7 in the Paradise Valley area (Tp48 R2 W4), was caught in tall grass along a roadway which dissects a parkland slough. The topography of the area was undulating and in many places aspen (*Populus tremuloides*) occupied low lying areas. The slough was long and narrow with emergent vegetation along the edge. A large stand of aspens was on the south side of the slough and cultivated fields on the north. This area is well within Parkland and the known range of the species.[1 5 6]

The second Arctic Shrew was secured in the area south of Cadogan (Tp37 R3 W4). This specimen was trapped in grass bordering a small slough. The area immediately surrounding the slough is pasture land, with the nearest trees approximately 1/4 to 1/2 mile distant. The topography is slightly undulating and the soil is sandy. The specimen, a female weighing 8.8 grams and measuring 111 mm, was caught on August 15. This is an extension of approximately 35 miles south of the Alberta range outlined by Salt.[5]

Wandering Shrew: The distribution of the Wandering Shrew in Alberta is not well known. Findley includes the entire province except for a narrow strip in the northeast.[2] Banfield follows Soper and includes most of northern and western Alberta, the mountains of the southwest, and a narrow strip along the United States border east to Saskatchewan, including the Cypress Hills.[1 6] Salt outlines a similar distribution, but includes the entire province north from the North Saskatchewan River, as well as the mountain regions of the west, and the narrow strip along the United States border.[5] The area south of the North Saskatchewan that includes the Battle, South Saskatchewan, Bow and Oldman

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[*] Natural History Contribution Number 32.

Rivers, he designates as a region of "occasional and probable" occurrence.

During our survey of the Hand Hills and the Wintering Hills, four Wandering Shrews were collected. The first was captured on August 23 in the Hand Hills (Tp29 R17 W4). This specimen was trapped on a south facing slope that was covered with grass and young rosebushes (*Rosa* sp.). There was a stand of aspen about 15 yards from the trap site. The surrounding area was either under cultivation or was pasture with clumps of willows (*Salix* sp.) and aspen scattered throughout. The specimen, a male, weighed 5.4 grams and measured 105 mm in total length.

The other three specimens were collected in the Wintering Hills area (Tp26 R18 W4). All were trapped in long grass either on a hillside or at the base of a hill. The trap site was the only area not grazed by livestock. The general area is grassed hills with scattered stands of aspen. Most of the treed and open areas had been grazed by cattle. The specimens, three females, were caught on September 25 and 26. They weighed 4.8, 5.0 and 5.6 grams and measured 106, 111 and 110mm, respectively, in total length.

Gapper's Red-Backed Vole: Gapper's Red-backed Vole is considered to be a characteristic species of the Boreal Forest community and prefers "forests where mossy rotten logs, stumps, and brush provide cover . . .".[3] [1] In Alberta it is distributed through the northern portion of the province south of the North Saskatchewan River and the upper limits of the Red Deer River. It is found in the mountains and in the Cypress Hills[1] [6]. The distribution is similar to the Wandering Shrew in Alberta.

During the trapping period in the Hand Hills, 7 Red-backed Voles were caught. These animals were trapped in a variety of situations: at the base of saskatoon bushes (*Amelanchier alnifolia*), in a willow thicket, in an aspen grove, in a willow thicket with little undergrowth, and along the edge of an aspen woods. The series of specimens consisted of 6 males and 1 female. The males ranged in weight from 9.3 to 19.5 grams and 102 to 110 mm in total length. The female weighed 19.6 grams and was 105 mm. in total length.

Water Shrew: Although not part of the survey conducted by the Provincial Museum of Alberta, a Water Shrew (*Sorex palustris*) collected by J. Salt on July 25, 1975, in the Wainwright area (Tp40 R6 W4) is worth reporting for it extends the range of this mammal several miles south of its present known range. The specimen, an adult female, weighed 12.9 grams and measured 147.0 mm in total length.

The Water Shrew in Alberta, as outlined by Salt, is found throughout the northern two thirds of the province south to the Red Deer River in central Alberta and to just across the Battle River in eastern Alberta.[5] The specimen reported here extends this range approximately 40 miles southward.

Discussion: The occurrence of an animal outside its known range may be the result of many factors. First, it may be the occurrence of an animal far outside its normal range as occasionally happens with birds that are blown off their usual migratory routes. Second, it may be an extension of the animal's range due to environmental changes, or third, it may be an artifact of the people working in the area. With mammals, long range extralimital occurrences are extremely unusual except for bats or animals that are transported accidentally or intentionally by man. Whether the range extensions reported here are results of environmental changes or due to more thorough collecting techniques is uncertain at this time and will have to await more extensive field work in the areas concerned.

[1] BANFIELD, A. W. F. 1974. *Mammals of Canada.* National Museums of Canada, University of Toronto Press, Toronto. 438 p.

[2] FINDLEY, J. S. 1955. *Speciation of the wandering shrew.* University of Kansas, Museum of Natural History, Lawrence, Kansas. Vol. 9. 68 p.

[3] KENDEIGH, S. C. 1961. *Animal ecology.* Prentice-Hall, Inc. Englewood Cliffs, N.J. 468 p.

[4] ROWE, J. S. 1972. *Forest regions of Canada.* Canadian Forestry Service, Department of the Environment. Information Canada, Ottawa. 172 p.

[5] SALT, J. R. 1975. *The Soricidae of Alberta — a review.* Unpublished manuscript. Provincial Museum of Alberta.

[6] SOPER, J. D. 1964. *Mammals of Alberta.* Department of Industry and Development, Queen's Printer, Edmonton. 402 p.

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COUGAR SHOT AT CUTKNIFE, SASK.

By TOM WHITE,
2580 Retallack St., Regina, Sask.

John Reinboldt went out to check the farm fence at about 9:30 a.m., November 15, 1975, when he saw a cougar moving in long leaps about 250 yards away. It was near the cattle so he went back for his dog and gun. He released his German shepherd which flushed the cougar out of the brush and pursued it for a quarter mile. The cougar would run, pause, look back and then run again. Mr. Reinboldt walked to within 30 yards of where the cougar was facing the dog and shot it. One hundred yards from where the cougar was first sighted, a deer was found with its belly slit open and the shoulder and neck cut. The cougar was obtained by Ken Smith, Conservation Officer at North Battleford, and given to the Museum of Natural History in Regina. It was a female weighing 125 pounds with a body 50 inches from tip of nose to base of tail and a further 27 inches for the tail.

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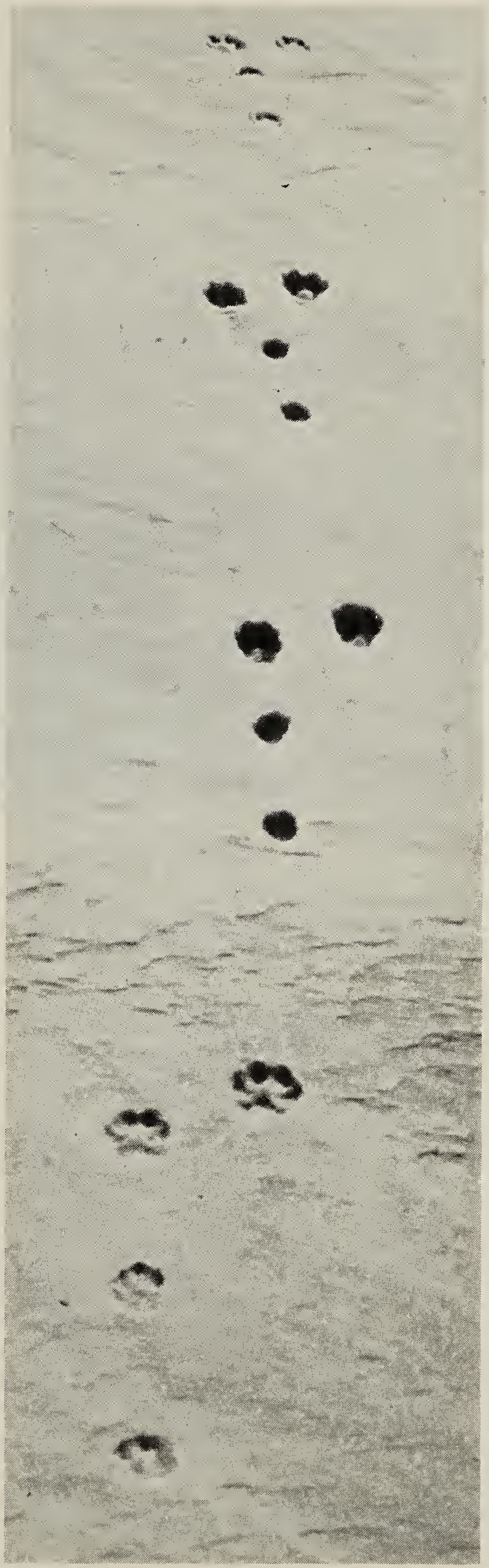
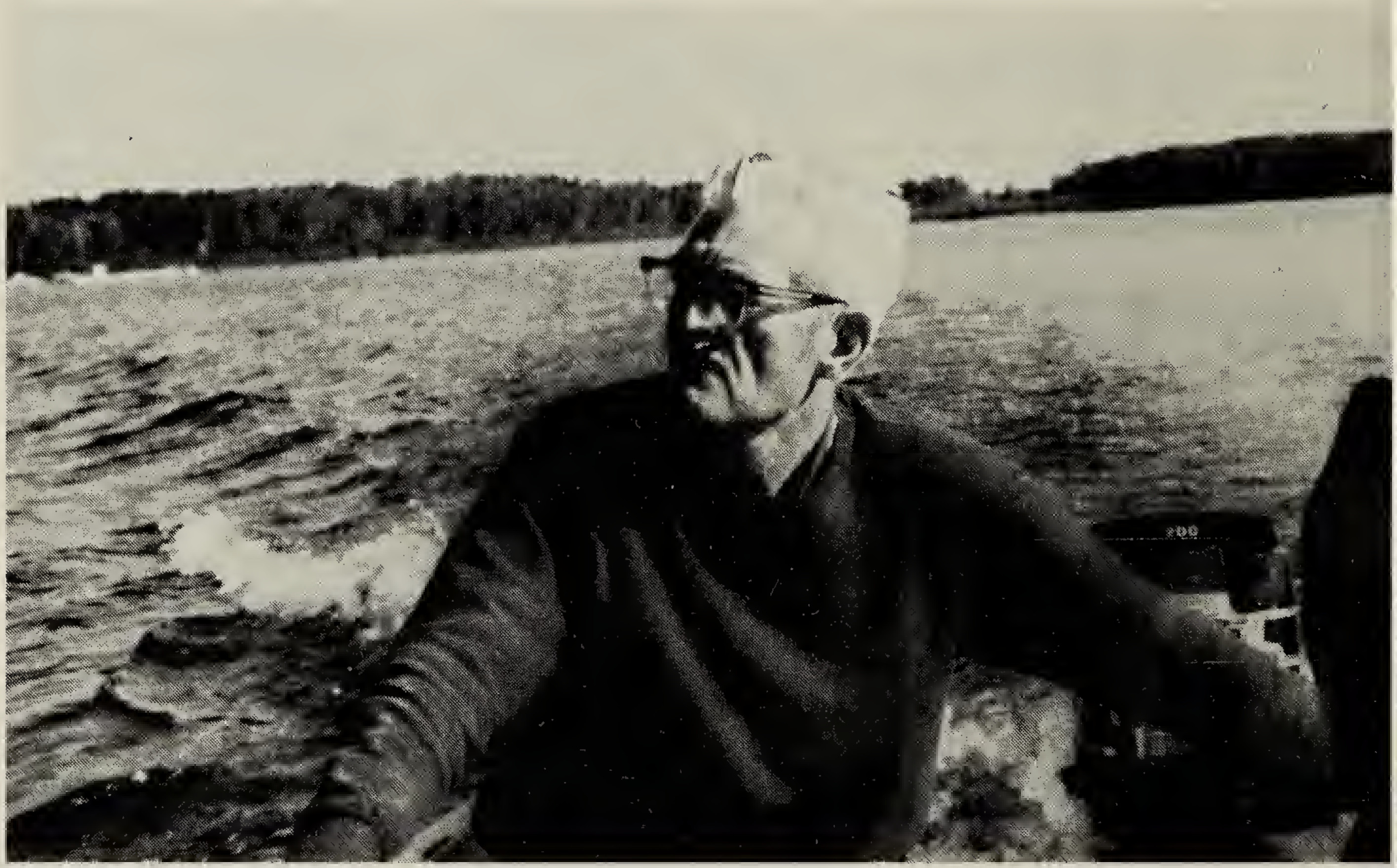


Rabbit tracks in the snow.

Lorne Scott

JAMES D. HOGG, IN MEMORIAM

JIM A. WEDGWOOD, 610 Leslie Ave., Saskatoon, Sask.



Jim Hogg at Lac La Ronge. Mary Shadick

Jim Hogg of Saskatoon, a long time member of the Society, died on June 19th.

Born in Scotland, Jim was 7 years old when his family came to Saskatoon, his home until his death. An electrician by trade, he joined the University of Saskatchewan's maintenance crew in 1937, eventually becoming Director of Maintenance. He retired 2 years ago.

Though naturally friendly and easy to meet, he was quiet about himself. It took a while to get to know him. Few of his acquaintenances in natural history circles knew he was once a star athlete, in 1924 setting a provincial high school track record for the mile race, a record which stood for a quarter of a century. When it was finally broken he made the official presentation of the ribbon to the winner.

As a young man Jim was active in Boy Scout work, serving as leader for the Rovers. This was a special delight to him because of the opportunities to be out of doors on camping trips. He liked to tell of the time they camped at Beaver Creek and one dark night the boys became edgy upon seeing a ghostly light among the trees — until Jim showed them that the eerie luminescence was from a fungus.

Avid campers, the Hoggs tented all over Western Canada and the States. They used to paint on the walls of their tent the names and dates of places where they camped. When the old tent was finally retired, its walls were covered with inscriptions. The Hoggs were among the first to make the circuit by water of the lakes in the back country of Prince Albert National Park, in 1936.

Jim and his wife Grace joined the Society in the early fifties and became familiar figures at the annual Summer Meets. They missed only two of these outings in 22 years. He was in the nucleus of local naturalists from which the Saskatoon Natural History Society evolved. A charter member, he served on the executive and was often a field trip leader. Jim's Bluebird Hike each spring became a local institution. He could be counted on in other ways too — helping with arrangements, forming work parties, contributing to programs — the conscientious rock-steady member at the core of the well-being of any society.

Many members of the provincial and local societies will recall seeing his nature slides. However, his photographic artistry was not limited to nature studies. A first-rate photographer, Jim had been continuously active in the Saskatoon Camera Club since 1941, being one of its past presidents and an honorary life member. He always placed well in Club competitons and often took awards. However, he had established a reputation in black-and-white photography long before then. While still in his twenties he had several of his works accepted in exhibition salons in the United States.

Jim was a good observer of birds and contributed much to the bird lore of the Saskatoon area. On two occasions he discovered species not previously recorded in the district.

His greatest contribution, however, was introducing others to bird watching, including the author of this memorial. The groups he led — for 20 years — on the Christmas and Mayday Bird Counts were invariably the largest of all the groups, people simply appreciating being with Jim for the day.

Jim didn't express in words what nature meant to him or his beliefs about conservation or his understanding of ecology. He didn't have to. His empathy with the natural world was somehow transmitted to others. He made one aware how often one observes without really seeing or feeling. I count myself fortunate to have known a man as tuned to his surroundings as Jim Hogg was. Two instances among many stand out in my mind: on a hiking trip in the north woods one December, watching Canada Jays and crossbills fly down and feed out of his hand as if it were the most natural thing on earth; and on a pack horse trip in the Rockies, standing on a mountain ridge with Jim, and realizing that he too felt the immensity of the scene force some of the wonder of creation into the consciousness. Words were not needed.

It was while leading a field trip that Jim died, on the banks of Eagle Creek, where he loved to be — outdoors.

◆

BREEDING BIRDS OF NORTH DAKOTA

By Robert E. Stewart, Tri-College Center for Environmental Studies, Fargo, N.D. 1975. 295 pp. $18.50 U.S.

This is a truly magnificent book. Chan Robbins correctly states in the introduction that "No other state can boast so complete a picture of the distribution and abundance of breeding birds as this volume now supplies." This book is remarkable in its thorough historical research, intensive fieldwork, superb ecological correlation, beautiful photographs and maps, and thorough bibliographic citation.

Stewart's fieldwork covered the state for more than 10 years, with a special attempt to count every pair of breeding birds in 130 representative but randomly selected quarter sections, three times during the 1967 breeding season. Stewart discusses the typical bird life of 9 different ecologic regions (e.g., Missouri Coteau and

Agassiz Lake Plain) and of 33 different communities (e.g., badlands, towns, Turtle Mountain deciduous forest, domestic haylands, short-grass prairie and wet-meadow swales).

Sixteen beautiful color photographs by John T. Lokemoen highlight the 36-page environmental section. For each of 182 forms, including three pairs of recognizable subspecies, there is a half-page map detailing the distribution in each of 1950 individual 6-by-6-mile townships. For example, the summer distribution of the Red-winged Blackbird is recorded in, by my count, 1408 townships, making it the fourth most widely distributed and numerically the third commonest bird species in the state — yet the map depicting all this is neither cluttered nor confusing. Beautiful half page and full page photos, most by Ed Bry, add much to the pleasure of browsing in this volume. The comprehensive bibliographic citation list is supplemented by an annotated review of the ornithology of the state, by period and by topic. The reader must be warned that no mention is made of migrants.

With the advent of man and his ever-burgeoning technology, with the draining of marshes and the clearing of native grassland, whole groups of species have decreased appreciably. Six species have been extirpated as breeding birds — the Trumpeter Swan, Whooping Crane, Mountain Plover, Passenger Pigeon, Whip-poor-will and Common Raven, while there has been only one very recent nest each of the Sandhill Crane (after 57 years' absence). I disagree with his reason for the decline of the Common Raven, which he ascribes to poison and baited traps; the decline of available buffalo carcasses might best explain their demise, at least on the adjacent Saskatchewan plains.

Among the declining wetlands birds, Horned Grebe, Canada Goose, Lesser Scaup, Common Goldeneye and Hooded Merganser are singled out for special mention. The raptors have fared very badly, with special mention of the Turkey Vulture, Broad-winged Hawk, Swainson's Hawk, Ferruginous Hawk, Golden Eagle, Prairie Falcon, Merlin, American Kestrel, Short-eared Owl and Burrowing Owl. The latter two happen also to be examples of grassland habitat disturbance, together with the Long-billed Curlew, Upland Plover, Common Nighthawk, Sprague's Pipit, Brewer's Blackbird, Baird's Sparrow, McCown's Longspur and Chestnut-collared Longspur. In addition, the five upland game species cited as declining (two after initial great success following their introduction), are the Greater Prairie Chicken, Sharp-tailed Grouse, Ring-necked Pheasant, Gray Partridge and Ruffed Grouse. The latter's decline may be related to a loss of woods, as is the case with the Mourning Warbler and Red-headed Woodpecker. Only two native species are noted as having shown a definite increase, the Wood Duck and the Western Kingbird. Most of these changes correlate very well with historical changes in adjacent Saskatchewan.

I do wish that Stewart had shared more of his unique statistical information with us. His use of such approximate, easily misunderstood and often abused terms as "common" and "fairly common" is a great pity when he had valid numerical estimates available for most species. From his technical paper in *The Auk* 89: 766-788, October 1972, one can obtain directly the population estimates for the 50 commonest bird species in North Dakota in 1967. One can obtain estimates for another 81 species by multiplying by 2200 the total pair counts on the 130 quarter-section study areas (since they together represented a sample of one in 2200 of the 70,599 square miles in the state). These numbers become progressively less accurate with decreasing sample size, yet provide a "ball-park figure" for most species.

Bob Stewart's book is now the envy of every other state and province. It is a beautiful and very important publication. Buy one! — *C. Stuart Houston,* 863 University Drive, Saskatoon, Sask. S7N 0J8.

Avocet. Lorne Scott

BIRDS OF THE ROSETOWN-BIGGAR DISTRICT, SASKATCHEWAN

By Wayne E. Renaud and Don H. Renaud

Special Publication No. 9,
Saskatchewan Natural History Society,
Box 1121, Regina, Saskatchewan.
121 pp., 1975, $4.00

The Rosetown-Biggar district covers an area of 1512 square miles lying 30 miles west of Saskatoon and 73 miles from the Alberta boundary. It will be a surprise even to some residents of the study area to learn that 236 species of birds have been recorded of which 111 stay and nest. On a single day in May, 1975, at the height of migration, 180 species of migrant and resident birds were recorded.

In compiling the list the authors drew upon the literature, unpublished field notes by J. Dewey Soper, records from Saskatchewan Natural History files, and notes from numerous other observers. The bulk of the information, however, is based on observations from 1968 to 1975 made by the authors, brothers who were born and raised in the vicinity. Accounts of species are well written and loaded with information. This is waterfowl country, lakes, ponds, sloughs and creeks together with meltwater in stubble fields attracting spring migrants and resident breeding birds. Accordingly, accounts of waterfowl deal with large numbers; e.g., at peak periods the authors recorded: 2000 Whistling Swans, 10,000 Canada Geese, 1800 White-fronted Geese, and 50,000 Snow Geese. Twenty species of ducks, some in large numbers, were documented.

One of the more significant aspects of this report is the extent to which species' occurrence is related to land use. Being a farmer's sons, the authors view farming with sympathy and understanding. There is a thorough discussion of changes in land use over the past several decades, emphasizing the effect on habitat and birdlife. This is supported by relevant information in the accounts of species. Alteration of the landscape by man has had both good and bad effects, depending on one's point of view and depending on the adaptability of the species concerned. The Long-billed Curlew, for example, described as an "uncommon summer resident" occurs in pairs "well distributed throughout the area." This is heartening news. On the other hand, the Upland Sandpiper (Plover) "unlike the Long-billed Curlew . . . has been unable to adapt to the change from grassland to farmland. As a result Upland Sandpipers are now restricted to a few of the larger native pastures and parklands in the area." Curiously, the Burrowing Owl, which appears to be doing well in the Saskatoon area, is listed as a "rare summer resident." I can't imagine why Burrowing Owls have "dry cow manure and dry frog skins" in their nest chamber, but such details are typical of the careful observations reported in this book.

Unfortunately, the publication was hurriedly put together to be available at the Winnipeg meeting of the American Ornithologists' Union. By a careful examination of those features which can easily go awry, I discovered some mistakes. Of 10 works referred to one or more times in the first 19 pages, six were unfortunately omitted from the Literature Cited section; one reference that is cited has an incorrect date. In the "Bird Species Index" there are six typographical errors. There are some inconsistencies in the Literature Cited section, e.g., the use of full names for authors in nine cases on p. 118 though none is given on p. 117. Six maps are suitably identified as Figures 1 to 6 (pp. 10-23), but four photos which appear in these pages are twice shown as Figures 1 and 2 (p. 14-15), a point of possible confusion.

Printers' errors and faults are a bother, but the omission of a page number (13!), insufficient ink on pp. 46-47 and 108-109, and some faulty printing in two paragraphs on p. 19 may be mentioned (I examined two random copies of the book; both had the same faults). Some of the latter material needs to be deciphered: in the second paragraph from the bottom read "species in *adjacent* regions . . . Wherever breeding *records* . . . data given *by* Godfrey . . ." The faulty binding and trimming of page 121, and the irregular positioning of the page numbers must be blamed on the printers.

This is more than a guide to the birds of the district, it is particularly a guide to birding in the area, for the authors give specific localities (nicely mapped), indicate appropriate seasons and even include names of landowners where good birding may be found. It is this intimate treatment that makes the book especially useful. It also contains much original information on bird behavior, habits and ecology that will be of interest to other investigators. This book should be in every library in the province as an example and model of what students can accomplish. It should be a useful guide and reference in nature science classes. It supplies good information on geography, demography, ecology, economics and land use relative to the occurrence of birds. It is a useful publication.

That this latest Special Publication by the Saskatchewan Natural History Society should have resulted from the efforts of two former junior naturalists should be no surprise in view of the number of younger members of this Society who have rapidly advanced in careers in biology and related fields. This subject is ably discussed in the "Foreword" to this book, written by C. Stuart Houston, M.D. Dr. Houston may be held personally responsible for having fostered and directed the enthusiasm of numerous young people in Saskatchewan.

To this reviewer, then, this book is one more example of the way in which the delight and satisfaction of good natural history work has been brought to fruition by the Saskatchewan Natural History Society. All members of the Society should feel proud to be a part of this venture which is getting people involved with natural history and helping to build a better understanding of our environment. — *Robert W. Nero*, 546 Coventry Road, Winnipeg, Manitoba, R3R 1B6.

Four Whooping Cranes Gary W. Seib

BIRDS OF THE BOZEMAN LATILONG
Palmer D. Skaar. 1969. Published by P. D. Skaar, 501 S. Third, Bozeman, Montana. 132 pp.

Montana Bird Distribution
Palmer D. Skaar. 1975. Published by P. D. Skaar, 501 S. Third, Bozeman, Montana. 56 pp.

Price for the two — $4.75

These two multilithed publications use a method of describing bird distribution which will be new to many readers: the latilong. A latilong is defined as the area between lines of latitude and longitude. Hence, *The Birds of the Bozeman Latilong* is "a compilation of data concerning the birds which occur between 45° and 46°N latitude and 111° and 112°W longitude". Montana Bird Distribution is a similar compilation for the area (with slight deviation for state boundaries) between 45° and 49°N latitude and 104° and 116°W longitude, a total of 47 latilongs.

The Bozeman Latilong covers an area of 3300 sq. mi. For the 277 species recorded there are remarks on seasonal abundance, peak and extreme dates of spring and autumn migration and nesting; there are only limited behavioural accounts. Accounts of 136 additional species which ". . . are potential members of the Bozeman Latilong list, in that they have been observed or are to be expected in the three state area of Idaho, Montana, and Wyoming" are included. I found this to be a very good feature of the book. Dr. Skaar's accounts of such potential Bozeman Latilong birds as the Whooping Crane, Eskimo Curlew, Hudson Godwit, Barn Owl, Gray Flycatcher, White-necked Raven and other southern and eastern passerines makes for a much more complete and informative text. In *Montana Bird Distribution* a letter or dash represents each latilong on a state map and indicates the status of a species in that latilong. The mapping technique is quite ingenious and its clarity and straightforwardness may be seen from this example.

94. PIPING PLOVER
Charadrius melodus Ord
Photo, May, 1974, Ft. Peck,
C. M. Carlson (AB 28:917). L22

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S6      ————————B——b
       —————————B———
          ———t————————
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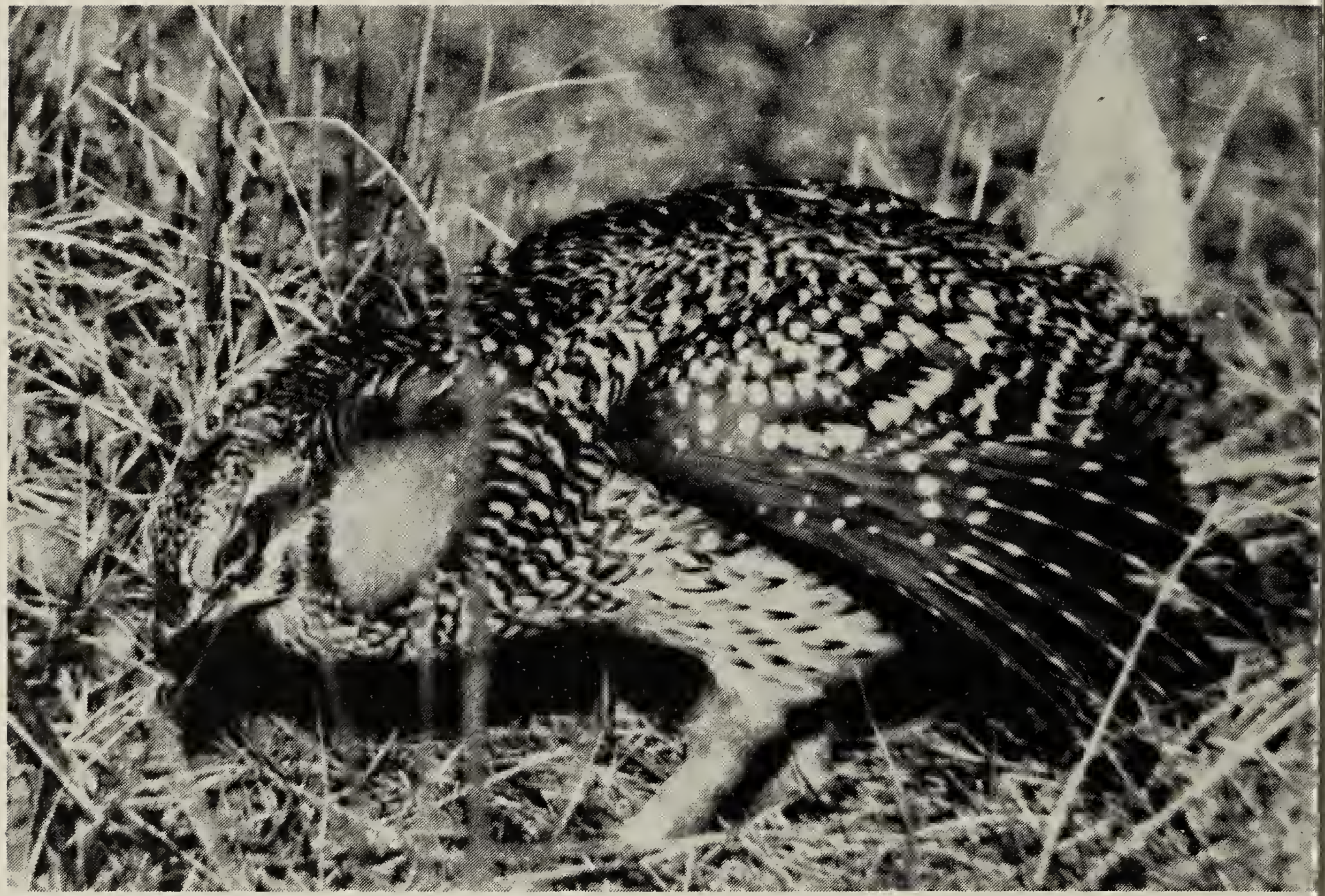
The above account of the Piping



Sharp-tailed Grouse. Bob Gehler

Plover indicates, among other things that there are substantiated breeding records (B) from two of the latilongs in the northeast corner of the state and an unsubstantiated (b) record from a third. It has occurred in one of the latilongs of central Montana but there are no breeding records (t). While this method may indeed be unfamiliar to many of us, it is a method which, in a slightly modified form, has been the basis for several European bird atlases (see *British Trust for Ornithology (BTO) News* No. 66, June 1974).

Never having done any serious birding in Montana, I cannot vouch for the accuracy of Dr. Skaar's compilations. However, the value of these works (along with the recent *Birds of Idaho* by T. D. Burleigh, 1972, Craxton Printers, Caldwell, Idaho 467 pp.) to prairie birdwatchers is immense in that there are now available, rather complete documentations of the distribution and occurrence of birds immediately south of our borders. To the serious student of bird distribution on the Canadian prairies, these Montana works should become standard references. What's more, they suggest system, i.e., the latilong, to which w may look for a future, more advance text on bird distribution. — *D. V. Chi Weseloh,* Provincial Museum o Alberta.

* * *

MANITOBA BIRD STUDIES
A Bibliography of Manitoba Ornithology

Martin K. McNicholl. 1975. Manitob Department of Mines, Resources and Environmental Management, Wir nipeg. 146 pages. No charge.

This smartly designed publication i a comprehensive compilation o published and unpublished works o Manitoba birds, covering all aspects o the subject including check-lists, gam bird surveys, biological and ecologica studies of all types. Although th author admits that it may be incom plete, it contains a surprising numbe of titles and thus provides a basi document for anyone working o birdlife in this region or on specie that occur in Manitoba. As the ne best thing to an annotated check-list of birds, it is an invaluable tool for all working ornithologists. For the naturalist and historian with an interest in workers in this region of Canada it presents a remarkable summary of who did what and when.

A former Winnipeg birder, Martin McNicholl's name has appeared on numerous reports in the *Blue Jay* and other journals. Now working towards a Ph.D. in ornithology at the University of Alberta, Martin was persuaded to put this report together so that it could be published in time for the American Ornithologists' Union 93rd Stated Meeting at Winnipeg, August 25-29, 1975. The date on the publication is given as August 9, 1975; actually, it came from the printer just in time to be distributed at the A.O.U. banquet on the evening of August 28 . . . a pretty close call! Nevertheless, it is carefully done and remarkably free of errors. This publication should provide impetus for further Manitoba studies. Congratulations to all involved.

Copies may be obtained free of charge by writing to: Miss Marge Cox, Publications Section, Box 9, 989 Century Street, Winnipeg, Manitoba R3H 0W4.

COMMON WEEDS OF CANADA

By Gerald A. Mulligan

Common Weeds of Canada by Gerald A. Mulligan is a recent (1976) paperback publication by McClelland and Stewart Limited in association with *Information Canada* and the Department of Agriculture containing 117 colored illustrations of the most common weeds of Canada. Most of the illustrations are reproduced from colored photographs taken by Mr. Mulligan of the weeds in their natural habitat. They are so clear and realistic that everyone, including beginners, should have no difficulty in identification by visually comparing wild plants with the colored plates.

The completely bilingual text of each species give its scientific and common names as well as the family to which it belongs. The brief description that follows includes the life duration, distribution across Canada, habitat and poisonous properties to both humans and livestock.

This pocket-size (20 cm. x 13 cm.) paperback should be welcomed by teachers as an invaluable addition to the school library. Children should now be able to easily identify the weeds in their own school yard and anyone curious to know our common weeds, either as a first step in irradication or just for general knowledge, would benefit from this book. For the more technically minded who wishes to study weeds in more detail and to identify related species, the standard edition of *Weeds of Canada* by Clarence Fankton and Gerald A. Mulligan should be used. — *Thelma Pepper*, 1015 Temperance St., Saskatoon, Saskatchewan.

THE ABC OF A SUMMER POND

By Judith C. Friedman

Johnny Reads, Inc.,
Box 12834,
St. Petersburg, Florida. 33733
36 illus., 1975. $4.50 paperback

A new book on nature is always a welcome addition to any school library or children's bookshelf. This one is no exception.

In her note to parents and teachers, Mrs. Friedman says *The ABC of a summer pond* is a book written to encourage children to examine environments and express their observations creatively by writing their own ABC books. The book was prepared mainly for children ages 5 to 9 and was field tested in 2nd grade classes in Connecticut.

I conducted my own observation of the book by having it read to 23 five-year-olds at the Institute of Early Childhood Education, University of Saskatchewan, Saskatoon. My conclusion was that the children were unfamiliar with some of the wildlife in the book and, therefore, they lost interest. Although the book did not hold the complete attention of the five-year-olds, older children would find it more interesting. The black and white drawings and photos, although well reproduced, would have much more appeal if they were in colour. — *Kathy Black*, 1133 - 3rd Street E., Saskatoon, Saskatchewan.

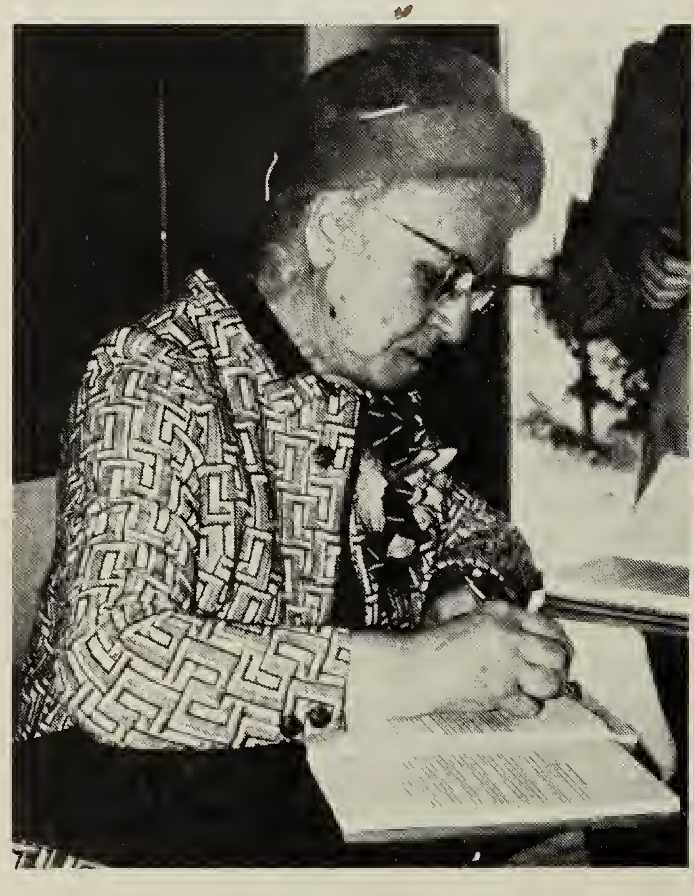
* * *

A SECOND LOOK

By Liz Roley

Published by the Regina Branch of the Media Club and the Regina Leader-Post P. 91 In book form 1976. $3.00 (+35 cents handling charges) and may be ordered from:
Regina Branch of the Media Club, 75 Deergrove Crescent, Regina, Sask., S4S 5M2. (Make cheques payable to Media Club Book Account)

For the past 20 years the Regina Leader-Post has published a weekly column called "Liz Roley's Nature Notes", with sketches by Mollie Lawrence. Now, thanks to the Regina Media Club and the Leader-Post, a selection of these columns has been combined into an enchanting little book, "A Second Look".



Liz Roley (Mrs. Elizabeth Cruickshank) autographing *A Second Look.*

After reading Liz Roley's pieces no one can doubt her vast knowledge of nature which she so willingly shares with everyone, nor can there be any doubt that she has tremendous respect and love for all God's creations whether birds, animals, plants, the sky with everchanging light and cloud, or even the weather. Most of all I find her imagination a delight. She sees a dry stalk of crested grass covered with ice crystals and it immediately becomes "a set of fairy bells"; the Western Meadowlark is "a master minstrel"; brilliant autumn leaves blowing by in the wind become "crusaders in procession"; Goldfinches are "feathered sunbeams" and a Veery "plucks his harp strings". About Thanksgiving — "we have much to be thankful for — not only the productive year but for the spectacular galaxy of glory with which fields and trees have ended their song of life." It is very colorful writing, and truly descriptive of our beloved prairies where too many people fail to see any beauty.

The book has been arranged in four parts — Spring, Summer, Autumn and Winter — each section made up of many short articles pertinent to the particular season. It is a perfect book for picking up at bedtime or off the coffee table. It is a perfect book to read while resting in the garden or some quiet spot outdoors. While the book may be read one column at a time, I must admit it is difficult to put it down once one starts it. I am sure it will be read and reread many times over by enthusiastic owners and, best of all, one doesn't have to belong to a specific age group to love it. Every time you reread "A Second Look" you will learn something new, and be bathed again in the peace and beauty that only God can create, and only a person like Liz Roley can properly convey in words. It is that kind of book! — *Pat O'Neil*, 1125 Elliott Street, Saskatoon, Sask. S7N 0V4

* * *

Letters

BIRD BOX SUGGESTIONS

I run a small line of bird houses, and have enjoyed birds and conservation for years. Here are some of my views on bird boxes.

If you have trouble with vandalism, place your boxes in a small amount of cover. Also have your boxes on the opposite side of a post, *not* facing the road. Generally the vandals are lazy gunners who shoot from vehicle windows. In this way they have less chance of spotting boxes and also less target if they do.

Our House Sparrow is a constant threat. I keep my houses low, below the top fence wire; this attracts few sparrows. Had only two out of 35 last week. These I try to catch and destroy.

Another thing I'm going to do is make two entrance holes for swallows and bluebirds. This will give them an escape route if danger threatens — *Ron Klimock,* Box 754, Russell, Manitoba. R0J 1W0

* * *

"DO AS I DO"

Three young robins were perched on the 3-foot fence in my flower garden. The mother robin was obviously coaxing them to get down into the garden to look for worms, but the young ones did not want to move. After about 5 minutes or so, the mother robin flew up, and then came swooping down and bumped the first young robin with its head, and the youngster fell into the garden. She then repeated this operation with the second and then the third.

The young robins must have known what this was all about, as all three began to look for worms, and I might add that they were successful in their attempts. — *Mrs. Anne Andrusyshen,* 1120 Main St., Saskatoon.

* * *

BULLSNAKE NEAR KYLE, SASK.

On July 11, at approximately 11:00 a.m., Jim Goring and I were driving on a grid road 13 miles south and 3 miles east of Kyle, Sask. We encountered a snake sunning itself on the road and could not avoid hitting it. Upon comparing the snake to a photo, we found it was a Bullsnake, 5 feet in length. Another person confirmed our identification of the snake. Unfortunately, conditions for preserving the specimen were unfavorable, so we destroyed it. — *Rodney Wapple,* Box 1153, Biggar, Sask. S0K 0M0

* * *

30 Years Ago

From the July-September, 1946. *Blue Jay* (Vol. 4, No. 4): *Bird Watching from a "Jeep".* By Farley Mowat. I arrived at Dundurn, Saskatchewan, on May 7, 1946, immediately set up a collecting camp, and prepared to devote a month to the study of migrational birds in the central part of the province. During the few days when it was warm enough for the birds and myself to brave the elements, I managed to make some very interesting observations. One record of particular interest was for a pair of Say's Phoebes noted on May 15. Although this seems to be a very northerly record, apparently the most northerly for the province, it is not unexpected since some Say's Phoebes nest along the Mackenzie River and are fairly common migrants through central and northern Alberta. Apart from the Phoebes, the best observations were made on wading birds which were very abundant on the few sloughs that remained alive in the Dundurn-Saskatoon area. On May 21, at a place called Proctor Lake, I was fortunate enough to observe 27 species of shorebirds in the space of five hours. These included Avocets, Hudsonian Curlews, Knots, Stilt Sandpiper and what was almost certainly a female

Red Phalarope. Specimens of all those were collected with the exception of the Red Phalarope which was in company with a thousand or more Northern Phalaropes and which could not be reached from shore.

Excepting the shore birds, the only other records of particular interest from this area were for Pinnated Grouse, Cooper's Hawk, Virginia Rails, Arkansas Kingbirds and innumerable Starlings. A total of 147 migratory species were observed during the month of May.

After leaving Dundurn I jeeped north past Montreal Lake until the road ran out and I was forced to revert to canoe and foot to carry me over some hundreds of miles of muskeg and spruce ridges. In this great and watery country I managed to spare a little time from the mosquitoes to observe the bird life and some of the more spectacular results of my search were a downy Solitary Sandpiper, which is apparently the first specimen ever to be taken in downy plumage; a breeding colony of Dowitchers that seem to belong to the recently invalidated '*Hendersoni*' race; breeding Sandhill Cranes; Franklin's Gulls to the number of plus a thousand in one flock; a single Lesser Snow Goose; Bohemian Waxwings; Chimney Swifts; downy Bonaparte's Gulls, five miles from the nearest suitable nesting area; a Richardson's Owl; breeding Lesser Canada Geese; and American Three-toed Woodpeckers.

I would like to draw attention to the infinitely small numbers of warblers that appeared in the spring of 1946. I should say that only about five or ten percent of the normal warbler breeding population arrrived on the northern nesting grounds this year, and no more than twenty percent of the numbers to be expected were in evidence during migration at Dundurn. I suspect this noticeable scarcity of an entire family of birds can be correlated with a series of unusual snow falls, and prolonged cold wet weather in early June, 1945. Someone interested in the effects of climatic conditions on large masses of birds might find some very interesting study here.

Another point that intrigues me is to discover the reason why one of the largest and most potentially productive ornithological areas in Canada, the Churchill River Basin, has for so long been neglected by ornithologists. I am fully convinced that detailed exploration of this area, particularly the Saskatchewan section, will more than fully repay the effort expended upon it, not only by way of providing new data on birds and other animals, but as living proof that the spirit of the Wild West is not wholly dead.

In conclusion I wish to thank the several, able local ornithologists throughout the province who so kindly aided me in my summer's work, and who with great good will managed t heal all of my spiritual wounds — i not my physical ones.

Richmond Hill, Ontario

28th ANNUAL MEETING OF THE SASKATCHEWAN NATURAL HISTORY SOCIETY

October 15 and 16, 1976

Museum of Natural History
Regina, Saskatchewan

This year the meeting will be held jointly with the **Parks Association of Canada**. Each society will conduct its separate business meeting, and that of the S.N.H.S. will be held in the morning and early afternoon of October 16.

October 15:
  Registration 6:30-10:30 p.m.
  Program 8:30 p.m.

October 16:
  Business Meeting, Program
  and Banquet

SASKATCHEWAN NATURAL HISTORY SOCIETY
P.O. BOX 1321, REGINA, SASKATCHEWAN, S4P 3B8

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